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ERANET-LAC
JOINT CALL 2015-2016

Full Proposal Form

Project acronym:	**FIBER**
Project Coordinator:	**Prof. Janusz Mikuła** Cracow University of Technology, Poland
Ref.:	**ELAC2015/T02-0721**

Funded by the following EU CELAC R&I funding agencies:

EU Member States and Associated Countries:

- Belgium: Belgian Science Policy, BELSPO
- Belgium: Fund for Scientific Research, F.R.S-FNRS
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- France: Institut of Research for Development, IRD
- Germany: AiF Project GmbH | Project management agency of BMWi, AiF
- Germany: Federal Ministry of Education and Research, BMBF
- Italy: Ministry of Health, SANITA
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- Spain: Ministry of Economy and Competitiveness, MINECO
- Turkey: The Scientific and Technological Reseach Countil of Turkey, TUBITAK

Latin American and Caribbean Countries:

- Argentina: Ministry for Science, Technology and Productive Innovation, MINCyT
- Barbados: Caribbean Science Foundation, CSF
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- Brazil: National Council for Scientific and Technological Development, CNPq
- Brazil: Research Support Foundation of the State of Rio de Janeiro, FAPERJ
- Brazil: Research Support Foundation of the State of Sao Paulo, FAPESP
- Chile: National Council for Science and Technological Research, CONICYT
- Colombia: Administrative Department of Science, Technology and Innovation, COLCIENCIAS
- Dominican Republic: Ministry of Higher Education, Science and Technology, MESCyT
- Ecuador: Secretariat of Higher Education, Science, Technology and Innovation, SENESCYT
- Guatemala: National Council of Science and Technology, CONCYT
- Mexico: National Council for Science and Technology, CONACYT
- Panama: National Secretary of Science, Technology and Innovation, SENACYT
- Peru: National Council of Science, Technology and Innovation, CONCYTEC
- Trinidad & Tobago: National Institute of Higher Education, Research, Science and Technology, NIHERST
- Uruguay: National Research and Innovation Agency of Uruguay, ANII

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INFORMATION RELATING TO THE COMPOSITION OF THE PROJECT CONSORTIUM

Project acronym:	FIBER		
Project full title:	Development of eco-friendly composite materials based on geopolymer matrix and reinforced with waste fibers		
Topics:	Topic #02: Waste management, recycling and urban mining		
Keywords:	Environment and resource saving Environmental protection in production, cleaner production Materials and reactions		
Total project costs:	647.480,00 €	Total requested funding:	628.660,00 €
Project duration (months):	36	Expected start date (mm/yyyy):	01/2017
Total Effort (Person Months):	148,00 PM		

1. Project Coordinator Details

First Name:	Janusz	Title:	Prof.
Family Name:	Mikuła	e-mail:	kinga@mech.pk.edu.pl
Position held:	Head of Institute of Materials Engineering	Telephone:	(48) 609974988
Organisation Name:	Cracow University of Technology	Organisation website:	http://www.pk.edu.pl/index.php?lang=en
Address of the organisation:	Warszawska 24 31-155 Cracow	Country:	Poland

2. Consortium: Details of the Organizations involved

Organisation	Contact Person / e-mail	Activity type[1]	Applying for funding from
Cracow University of Technology *	Prof. Janusz Mikuła kinga@mech.pk.edu.pl	HE	National Centre for Research and Development (NCBR) (Poland)
Nigde University	Dr. Neslihan Dogan-Saglamtimur neslihandogansaglamtimur@gmail.com	HE	The Scientific and Technological Research Council of Turkey (TUBITAK) (Turkey)
Pontificia Universidad Católica del Peru	Dr. Prof. Javier Nakamatsu skim@pucp.pe	HE	National Council for Science, Technology and Innovation (CONCYTEC) (Peru)
Riga Technical University	Dr.Sc.Ing., assistant professor. Janis Sliseris janis.sliseris@rtu.lv	HE	State Education Development Agency (VIAA) (Latvia)
Babes-Bolyai University	Dr. Gabriel Furtos gfurtos@yahoo.co.uk	HE	Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) (Romania)
Catholic University of Uruguay Damas Antonio Larrañaga	Dr. Ing. Martín Duarte Guigou martin.duarte@ucu.edu.uy	HE	National Research and Innovation Agency of Uruguay (ANII) (Uruguay)

Organisation	Contact Person / e-mail	Activity type[1]	Applying for funding from
University of Mar del Plata	Prof Exequiel Rodríguez erodriguez@fi.mdp.edu.ar	HE	Ministry for Science, Technology and Productive Innovation (MINCyT) (Argentina)
Polytechnic University of Timişoara	Dr. Eng. Dan-Andrei Şerban dan.serban@upt.ro	HE	Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) (Romania)

[1] HE – Higher Education, RES – Research, IND – Industry, SME, OTH - Others

3.1. Overall Project Costs

Organisation	Person Months	Costs (€)	Partner Contribution (€)	Requested Funding (€)
Cracow University of Technology *	16,00	80.000,00 €	0,00 €	80.000,00 €
Nigde University	36,00	113.500,00 €	0,00 €	113.500,00 €
Pontificia Universidad Católica del Peru	16,00	94.100,00 €	18.820,00 €	75.280,00 €
Riga Technical University	16,00	69.960,00 €	0,00 €	69.960,00 €
Babes-Bolyai University	32,00	108.360,00 €	0,00 €	108.360,00 €
Catholic University of Uruguay Damas Antonio Larrañaga	7,00	50.000,00 €	0,00 €	50.000,00 €
University of Mar del Plata	0,00	40.000,00 €	0,00 €	40.000,00 €
Polytechnic University of Timişoara	25,00	91.560,00 €	0,00 €	91.560,00 €
TOTAL	148,00	647.480,00 €	18.820,00 €	628.660,00 €

3.2. Detailed Project Costs

3.2a. Personnel Costs

Organisation	Average Monthly Salary (€)	Nº of Man-Months	Total Cost (€)	Requested Funding (€)
Cracow University of Technology *	1.800,00 €	16,00	28.800,00 €	28.800,00 €
Nigde University	1.388,00 €	36,00	49.968,00 €	49.968,00 €
Pontificia Universidad Católica del Peru	3.000,00 €	16,00	48.000,00 €	29.180,00 €
Riga Technical University	2.000,00 €	16,00	32.000,00 €	32.000,00 €
Babes-Bolyai University	2.000,00 €	32,00	64.000,00 €	64.000,00 €
Catholic University of Uruguay Damas Antonio Larrañaga	3.000,00 €	7,00	21.000,00 €	21.000,00 €

Organisation	Average Monthly Salary (€)	Nº of Man-Months	Total Cost (€)	Requested Funding (€)
University of Mar del Plata	0,00 €	0,00	0,00 €	0,00 €
Polytechnic University of Timişoara	2.000,00 €	25,00	50.000,00 €	50.000,00 €
SUBTOTAL	15.188,00 €	148,00	293.768,00 €	274.948,00 €

3.2b. Equipment

Organisation	Description	Total Cost (€)	Requested Funding (€)
Cracow University of Technology *	Not applicable	0,00 €	0,00 €
Nigde University	Cost of equipment for the project (specification has been agreed with national funding organization).	30.766,00 €	30.766,00 €
Pontificia Universidad Católica del Peru	Not applicable	0,00 €	0,00 €
Riga Technical University	not applicable	0,00 €	0,00 €
Babes-Bolyai University	not applicable	0,00 €	0,00 €
Catholic University of Uruguay Damas Antonio Larrañaga	non applicable	0,00 €	0,00 €
University of Mar del Plata	not appllicable	0,00 €	0,00 €
Polytechnic University of Timişoara	not applicable	0,00 €	0,00 €
SUBTOTAL		30.766,00 €	30.766,00 €

3.2c. Materials

Organisation	Description	Total Cost (€)	Requested Funding (€)
Cracow University of Technology *	The costs of materials comprise mainly: - purchase of materials and semi-finished products, including different fillers - fibers (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation. The cost of materials are estimated on EUR 500 per month.	18.000,00 €	18.000,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Nigde University	The costs of materials comprise mainly: - purchase of materials and semi-finished products, including different fillers - fibers (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation.	8.668,00 €	8.668,00 €
Pontificia Universidad Católica del Peru	Reagents, materials and consumables: The costs of materials in the research were estimated at approx. EUR 500 / month (500 EUR) and they were set proportional to the needs of the tasks and months (36 months). Total EUR 18 000. The costs comprise mainly: - purchase of materials and semi-finished products (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation. - reference literature.	18.000,00 €	18.000,00 €
Riga Technical University	Reagents, materials and consumables: The costs of materials in the research were estimated at approx. EUR 300 / month and they were set proportional to the needs of the tasks and months (36 months). Total EUR 10 800. The costs comprise mainly: - purchase of materials and semi-finished products (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation.	10.800,00 €	10.800,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Babes-Bolyai University	The costs of materials comprise mainly: - purchase of materials and semi-finished products, including different fillers - fibers (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation. The cost of materials are estimated on EUR 300 per month.	10.800,00 €	10.800,00 €
Catholic University of Uruguay Damas Antonio Larrañaga	Reagents, materials and consumables: The costs of materials in the research were estimated at approx. EUR 300 / month (300 EUR) and they were set proportional to the needs of the tasks and months (36 months). Total EUR 18 000. The costs comprise mainly: - purchase of materials and semi-finished products (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation. - Bibliographic material.	10.800,00 €	10.800,00 €
University of Mar del Plata	The costs of materials comprise mainly: - purchase of materials and semi-finished products, including different fillers - fibers (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation. The cost of materials are estimated on EUR 500 per month.	18.000,00 €	18.000,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Polytechnic University of Timişoara	The costs of materials comprise mainly: - purchase of materials and semi-finished products, including different fillers - fibers (such as materials, and other additives added to modify the properties of the material); - containers and other non-durable laboratory equipment used during the test, - purchase of material samples for comparison, - reagents and materials necessary for the research and preparation of samples, e.g. liquid nitrogen for SEM observation. The cost of materials are estimated on EUR 300 per month.	10.800,00 €	10.800,00 €
SUBTOTAL		105.868,00 €	105.868,00 €

3.2d. Sub-Contracting

Organisation	Subcontractor	Description	Total Cost (€)	Requested Funding (€)
SUBTOTAL			0,00 €	0,00 €

3.2e. Travel and Subsistence Costs

Organisation	Description	Total Cost (€)	Requested Funding (€)

Cracow University of Technology *	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: National rules (Rozporzadzenie Ministra Pracy i Polityki Spolecznej z dnia 29 stycznia 2013 r. w sprawie naleznosci przysługujacych pracownikowi zatrudnionemu w panstwowej lub samorzadowej jednostce sfery budzetowej z tytułu podrozy służbowej) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 0 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 3 190 (including: flights - EUR 2 200, cost of stay – EUR 990) 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 1 485 (including: flights - EUR 360, cost of stay – EUR 1 125) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 3 100 (including: flights - EUR 2200, cost of stay – EUR 900) 5. Riga (Latvia) meeting in 25 month, estimated cost: EUR 1 570 (including: flights - EUR 550, cost of stay – EUR 1 020) 6. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 2 820 (including: flights - EUR 2200, cost of stay – EUR 620) 7. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 1 112 (including: flights - EUR 360, cost of stay – EUR 752) TOTAL: EUR 13 277, to budget --> EUR 13 300	13.300,00 €	13.300,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Nigde University	The cost of travels connected with 7 project meetings, they will be connected with scientific seminary (presenting results of the project): Kick-off project meeting in Poland (Cracow), meeting in 1-3 month, joined with workshop; Project meeting in Lima (Peru) meeting in 9 month, joined with seminary; Project meeting in Nigde (Turkey) meeting in 15 month, joined with seminary; Project meeting in Mar del Plata (Argentina) meeting in 20 month, joined with seminary; Project meeting in Riga (Latvia) meeting in 25 month, joined with seminary; Project meeting in Montevideo (Uruguay) meeting in 30 month, joined with seminary and closing conference in Cluj-Nepoca or Timisoara (Romania) in 35-36 month.	7.866,00 €	7.866,00 €
Pontificia Universidad Católica del Peru	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 0 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 1780 (including: flights - EUR 1060, cost of stay – EUR 720) 4. Riga (Latvia) meeting in 25 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 5. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 1 780 (including: flights - EUR 1 060, cost of stay: EUR 720) 6. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) TOTAL: EUR 15 240, to budget --> EUR 15 300	15.300,00 €	15.300,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Riga Technical University	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 1 270 (including: flights - EUR 550, cost of stay: EUR 720) 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 1 440 (including: flights - EUR 720, cost of stay: EUR 720) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 5. Riga (Latvia) meeting in 25 month, estimated cost: EUR 0 6. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 7. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 1 270 (including: flights - EUR 550, cost of stay: EUR 720) TOTAL: EUR 12 740, to budget --> EUR 12 800	12.800,00 €	12.800,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Babes-Bolyai University	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 1 112 (including: flights - EUR 360, cost of stay – EUR 752) 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 1 270 (including: flights - EUR 550, cost of stay: EUR 720) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 5. Riga (Latvia) meeting in 25 month, estimated cost: EUR 1 270 (including: flights - EUR 550, cost of stay: EUR 720) 6. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 7. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 0 TOTAL: EUR 12 412, to budget --> EUR 12 500	12.500,00 €	12.500,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Catholic University of Uruguay Damas Antonio Larrañaga	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 1 780 (including: flights - EUR 1060, cost of stay – EUR 720) 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 1080 (including: flights - EUR 360, cost of stay: EUR 720) 4. Riga (Latvia) meeting in 25 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 5. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 0 6. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) TOTAL: EUR 14 540 to budget --> EUR 14 600	14.600,00 €	14.600,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
University of Mar del Plata	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 1 780 (including: flights - EUR 1060, cost of stay – EUR 720) 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 0 4. Riga (Latvia) meeting in 25 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 5. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 1 080 (including: flights - EUR 360, cost of stay: EUR 720) 6. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) TOTAL: EUR 14 540 to budget --> EUR 14 600	14.600,00 €	14.600,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Polytechnic University of Timişoara	Cost are calculated for two person and 2 days meeting (3 nights) Flights according to cost estimated by EU for EU programs (ERASMUS+), distance calculator: http://ec.europa.eu/programmes/erasmus-plus/tools/distance_en.htm Cost of stay according to: ERASMUS+ program (staff mobility) as EUR 120 per night) 1. Cracow (Poland), kick-off meeting (1-3 month of project), estimated cost: EUR 1 112 (including: flights - EUR 360, cost of stay – EUR 752) 2. Lima (Peru) meeting in 9 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 3. Nidage (Turkey) meeting in 15 month, estimated cost: EUR 1 270 (including: flights - EUR 550, cost of stay: EUR 720) 4. Mar del Plata (Argentina) meeting in 20 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 5. Riga (Latvia) meeting in 25 month, estimated cost: EUR 1 270 (including: flights - EUR 550, cost of stay: EUR 720) 6. Montevideo (Uruguay) meeting in 30 month, estimated cost: EUR 2 920 (including: flights - EUR 2 200, cost of stay: EUR 720) 7. Cluj-Nepoca or Timisoara (Romania) meeting in 35-36 month, estimated cost: EUR 360 (travel cost: EUR 360) TOTAL: EUR 12 772, to budget --> EUR 12 800	12.800,00 €	12.800,00 €
SUBTOTAL		103.766,00 €	103.766,00 €

3.2f. Other Costs

Organisation	Description	Total Cost (€)	Requested Funding (€)
Cracow University of Technology *	1) Organization kick off meeting in Poland for the consortium members. The cost are estimated for about 16 person. The cost includes: cost of materials, publication, food & beverage (EUR 2 500) 2) Project web site and other information materials (EUR 1 000) 3) Cost of translation documented related with project (EUR 400)	3.900,00 €	3.900,00 €

Organisation	Description	Total Cost (€)	Requested Funding (€)
Nigde University	- Technical and support services directly related to project execution, including analysis, equipment maintenance and repair - Costs of transportation for raw materials field works publication and dissemination	16.232,00 €	16.232,00 €
Pontificia Universidad Católica del Peru	Technical and support services directly related to project execution, including analysis, equipment maintenance and repair, surveys and specific market studies	5.900,00 €	5.900,00 €
Riga Technical University	1. Cost of events meeting organization (seminary connected with project topic) 2. Cost of trenslation documents related with project	2.700,00 €	2.700,00 €
Babes-Bolyai University	Cost of consumables connected with project dissimination.	3.000,00 €	3.000,00 €
Catholic University of Uruguay Damas Antonio Larrañaga	- Promotion and dissemination - Administration expenses (up to 5% of the total budget) - Contingencies (up to 5% of the total budget)	3.600,00 €	3.600,00 €
University of Mar del Plata	1) Organization of meeting in Argentina for the consortium members. The cost are estimated for about 16 person. The cost includes: cost of materials, publication, food & beverage. 2) publication and dissemination (participation in the conference)	7.400,00 €	7.400,00 €
Polytechnic University of Timişoara	Cost of consumables connected with project dissimination.	2.700,00 €	2.700,00 €
SUBTOTAL		45.432,00 €	45.432,00 €

3.2g. Overheads **(Please, check specific national requirements)**

Organisation	Percentage Overheads	Total Cost (€)	Requested Funding (€)
Cracow University of Technology *	25,00 %	16.000,00 €	16.000,00 €
Nigde University	0,00 %	0,00 €	0,00 €
Pontificia Universidad Católica del Peru	10,00 %	6.900,00 €	6.900,00 €
Riga Technical University	20,00 %	11.660,00 €	11.660,00 €
Babes-Bolyai University	20,00 %	18.060,00 €	18.060,00 €
Catholic University of Uruguay Damas Antonio Larrañaga	0,00 %	0,00 €	0,00 €
University of Mar del Plata	0,00 %	0,00 €	0,00 €

Organisation	Percentage Overheads	Total Cost (€)	Requested Funding (€)
Polytechnic University of Timişoara	20,00 %	15.260,00 €	15.260,00 €
SUBTOTAL		67.880,00 €	67.880,00 €

4. Executive summary

(for internal ERANET-LAC use only)

The project is an answer for a specific challenge connected with waste management, recycling and urban mining. The main objective of the project is to prepare a broad spectra of advanced and progressive new fibre-based materials for construction industry with high potential of commercial utilization, especially development of composite materials from waste natural fibres such as: animals and vegetables, for replacing the traditional construction materials. The main adventagus of the project are complexity material and network. The specific objectives are:

- Preparation of the theoretical concept for the new composites, analysis and optimization of the structure and mechanical properties and performance of designed composite materials and assessment of their materials for selected applications (WP1).
- The selection of most suitable waste fibres added to the hydrothermally alkalized fly ash in order to improve its properties (WP2)
- Analysis and optimization using computer methods of the structure and mechanical properties of composites and the assessment of their ability to be used the construction materials (WP3)
- Comparison between the new composites and the traditional materials in regard of their properties in laboratory (WP4)
- Preparation of solutions and testing prototype components in lab as well as in relevant environment and comparison between the new composites and the traditional materials in regard of their properties in varying environmental conditions. (WP5)

The main result will be development of minimum 5 new, eco-friendly composite materials from waste natural (animal, vegetable or mineral) fibers, for replacing the traditional construction materials, especially those based on the polymer matrix and synthetic fibers, with new ones containing bio-based matrices and fiber derived from waste, for instance making a composite material from wastes from flax, bio-waste straw, nut shells, hen feathers, waste from mineral wool production and other organic waste materials.

The project will have potential impact to specific group such as researchers, companies, the other interested organization (non-profit organization, especially focused on environmental issues), the policy making institution and whole society (improving human live thanks to waste utilization). The results of the project are of interesting mostly for companies (because economical benefits), but some of them can be potentially interesting for government institutions planning to increase pro-ecological activities and trough this also for whole society.

TECHNICAL DESCRIPTION OF THE PROJECT

5. Publishable summary of the project

(this summary will be used solely for publication purposes)

The project is an answer for a specific challenge connected with waste management, recycling and urban mining. The main objective of the project is to prepare a broad spectra of advanced and progressive new fibre-based materials for construction industry with high potential of commercial utilization, especially development of composite materials from waste natural fibres such as: animals and vegetables, for replacing the traditional construction materials.

The project is divided into 5 thematically connected tasks (WP) that will be made by universities from EU and CELAC countries. The consortium members are: Cracow University of Technology - leader (Poland), Nigde University (Turkey), Pontificia Universidad Católica del Peru (Peru), Riga Technical University (Latvia), Babes-Bolyai University, (Romania), Catholic University of Uruguay Damas Antonio Larrañaga (Uruguay), University of Mar del Plata (Argentina) and Polytechnic University of Timişoara (Romania).

6. Scientific and technological challenge

The project is an answer for a specific challange connected with waste management, recycling and urban mining. The main objective of the project is to prepare a broad spectra of advanced and progressive new fibre-based materials for construction industry with high potential of commercial utilization, especially development of minimum 5 eco-friendly composite materials from natural (animal, vegetable or mineral) and waste fibers, for replacing the traditional construction materials, especially those based on the polymer matrix and synthetic fibers, with new ones containing bio-based matrices and fiber derived from waste, for instance making a composite material from wastes from flax, bio-waste straw, nut shells, hen feathers, waste from mineral wool production and other organic waste materials.

These new materials and products will overcome current materials in term of reduction of CO2 emissions during their production, decrease of demands on transport of raw materials and final products and improvement of their appearance and properties. These new materials should be also cost effective and ecological. The next step is to do the analysis of practical applications of new materials for construction industry and preparation of solutions and testing prototype components in laboratory as well as validation in relevant environment.

The project proposes have new approaches to improve the functionality of construction materials. The project was preceded by an analysis of the needs of businesses and strategic documents in the field of market gaps. It responds to the market needs, especially it deals with several issues in construction industry and proposes solutions with the application of eco-friendly fiber-based composites. Construction industry it is very important field in the world economy. At world level, civil works and building construction consumes 60% of the raw materials extracted from the lithosphere and in Europe, the mineral extractions per capita intended for building amount to 4.8 tonnes per inhabitant per year [Bribián et al., 2011, p. 1133]. Innovations in this branch have a strongly impact on the sustainable development of competitiveness EU as well as CELAC. Contemporary, fibre-based materials in construction industry should not only improved enviromental safety and functionality of the building materials, but they also have reasonable prices.

The project is expected to develop engineering fibre-based materials for novel, smart, high-value and high-performance products for technical and industrial use (construction materials). New materials enable a broader spectrum of industrial applications. The planned solutions are dedicated for enterprises needs and in accordance with market trends. Main innovative ideas and scientific-technologic challenges on the construction market are:

- Development of eco-friendly materials;
- Development of cost effective product and technologies (cost of materials as well as assembly, transportation etc.);
- Development of low energy consumption technologies;
- Development of materials that can work in extreme condition (for example: flame and corrosion resistant);

- Development of new cost effective materials for special application.

The cost effectiveness and commercial potential of the innovative technologies will compared to state-of-the-art solutions currently available on the market. It will be quantitatively monitored during the whole project duration. In the project, it is a plan for a design and analysis of practical applications of new materials for construction industry and preparation of solutions and testing prototype components in laboratory as well as validation in relevant environments, demonstration (especially scalability towards industrial needs) and/or validation of the technical and economic viability of new solutions (technologies / products) in an operational (or near to operational) environment. Activities are also planned dedicated to development of modelling methods, multiscale modelling, characterisation, and standardisation of the materials.

The specific advantages of the proposed solution compared to other existing alternatives are: the international innovative level, the possibility to applicate them in different countries (different condition) and friendliness for environment. The project emphasizes on new products will have strong social impact, on public safety an environment protection.

7. Technical and scientific description of the project

State-of-the-art, including, recent research relevant to the project undertaken by the consortium partners

The project proposals are based on the state-of-the-art and they create a new value. It proposes solutions that are beyond the current market application, but it gives answer to market needs. Nowadays, there is a great need to use plant particles and other natural resources, including building material in construction [Le et al., 2015, 201]. It is because of the idea of sustainable development. It is necessary to involve in product design methods and techniques guiding the use, recycling and replacement of natural resources and the upholding of the earth's productivity. Building a sustainable and affordable construction requires a design of efficient materials with lower environmental impact especially in regard to the carbon footprint [Le et al., 2015, 201; Kidalova, 2012, p.116]. The fibre-based solution uses more often natural materials such as hemp, straw, flax and bamboo, as building materials, [Le et al., 2015, 201]. It is clearly needed to develop it for new products and new type of construction.

CO2 emission is another environmental aspects. It is necessary to find ways for their reduction. Nowadays, alkali activated materials, such as the hydro-thermally alkalized fly ash, are popularly called geopolymers can be the solution of this problem. In comparison to the traditional materials, such as concrete, alkali activated materials have a number of advantages. They can operate in normal ambient conditions (being an environmental-friendly alternative), and in extreme conditions (in which traditional materials wear out quickly and cannot be used at all) [Davidovits, 1994]. In addition, the production of such composites, compared to the materials for special applications (working in difficult conditions) is economically more advantageous including the low energy consumption of the their manufacturing [Łach et. al., 2014, 143].

An important factor in the growth of interest in geopolymers as a new material is also a growing public awareness of the need to protect the environment. This material can be made not only from waste materials, for example fly ashes, but also during its production much lower amount of greenhouse gases is emitted in comparison to the traditional construction materials such as Portland cement [Nazari, 2013, 357]. At the same time, the obtained materials have better properties than the conventional ones [Cheng, 2011, 90; Mei et al. 2012, 865; Ogundiran et. al., 2013, 29; Yunsheng et. al., 2010, 271] i.e.: high initial strength, reduced shrinkage and low thermal conductivity, a good fire resistance (up to 1000 °C) and lack of emission of toxic fumes when heated, high level of resistance to a variety of acids and salts, good resistance to abrasion, adherence to the new and old concrete, steel, glass and ceramics, lack of corrosion of the steel reinforcement in a geopolymer and a high level of adhesion to steel inherent protection of reinforcing steel due to high residual pH and low diffusion rates chloride, high resistance to atmospheric conditions, lower costs and wide availability of the raw materials required for their manufacturing, with the possibility of production from waste materials, such as fly ash from CHP power plants and power plants, reduced energy consumption in the manufacturing process (environment friendly) and possibility of hazardous waste immobilization by shutting them in geopolymers composites.

An important factor is also transportation cost of the material. It gives tangible benefits in terms of reduced funding for the transport and it is a way to reduce the emissions of exhaust gases [Bribián et al., 2011, p. 1138]. It is possible to reduced the costs of buildings thanks to use a local/ regional materials (especially as a filler).

All tasks are supported by numerical analysis, especially experimentally validated computational models for the analysis and prediction of mechanical properties of the composite materials (WP3). The models are valuable, especially for materials reinforced with fibers [Mazzotti and Murgo, 2015, 212]. The theoretical results will be compared with experimental ones to validate the effectiveness of the proposed solution. Experimental and computational study of the mechanical behaviour of novel composites will be carried out. The effect of micro particles, their content and distribution on the mechanical behaviour of fibre reinforced composites, damage initiation and evolution will be studied in numerical experiments. Also, the effect of temperature variations on damage evolution will be studied numerically. Models of mechanical behaviour will be based on multi-scale methods for simulation of fibre reinforced composites. The approach will be advanced towards thermos-mechanical and damage behaviour of the material. The effect of the matrix properties, interface strength, structural components and micro-particle distribution on the strength and fatigue damage will be studied in the simulations. As a result, the recommendations toward the prediction and improvement of mechanical properties and reliability of the materials by modifying their structures will be derived. In the project there will be developed an transversely isotropic material model to model the single fiber taking into account fiber axial damage, fiber cell wall damage due to shear forces and fiber cell wall damage in traversal direction. A special model for fiber joints was also created [Sliseris, Andrä et al., 2014, Šliseris, Andrae et al., 2015 and Šliseris, J., Yan et. al., 2016]. Some ideas about an effective multiscale modeling on micro and macro scale will developed also during the project.

The project will provide new material solutions for the construction industry. The materials will be based on commercially available raw materials, and will respond to the advanced needs of the construction industry, in particular, advanced design and architectural solutions. New materials will be an innovative products. The development of new materials for industrial applications have a multistep form. It is necessary not only to prepare new composites, but also to carry out exhaustive tests to determine their properties and to establish procedures for their use. The study will define the practical applicability and limitations of the proposed materials.

The project will contribute to the development of the present state of science and technology. Moreover, the project will also get useful knowledge concerning the importance of physical-chemical aspects of the eco-friendliness materials, which is particularly crucial when it comes to raising awareness of the possibility their applications. The work carried out in the design of materials, in particular the modelling will be based on modern optimization algorithms. New solutions will be also developed for modeling composites with different types of fibers.

The project will also developed new technologies that will contribute to the competitiveness and sustainability of the world construction industry through implementation of innovative products. New technologies will be supported by material designed to meet their requirements.

Technical milestones and expected results

The main expectation of users, which corresponds to the proposal topic is to increase the range of solutions available on the market in the material used in the construction sector. The mainly expectations towards new materials are: durability, better working parameters in comparison with currently used material (such as: better thermal insolation, resistance to fire etc.), cost-effectiveness, architectural attractiveness). There is also engaged in cutting edge technologies in construction sector. The specific expectations and milestones are defined in the part: Work plan.

New materials will be more environmentally friendly, especially because the reduction of greenhouse gases emission in the sector producing construction materials. Approximately each squared meter built entails an average emission of 0.5 tons of carbon dioxide and an energy consumption of 5754 MJ (which is variable depending on the building design), only including the impact associated with materials. An answer to this problem can be new fibre-reinforced materials and also fibre-reinforced traditional materials (when we use a natural waste fibres). For example, during the production of geopolymers, there is much lower amount emitted greenhouse in comparison to the traditional construction materials such as Portland cement [Nazari, 2013, 357]. It is estimated, that in comparison to the cement production the manufacturing of geopolymers is accompanied by the 4–8 times smaller release of carbon dioxide and by 2-3 times smaller energy consumption [Mikuła and Łach, 2012, 113]. It is also important to avoid the production of materials affecting the natural resources. It is necessary to promote the use of the best techniques available and innovation in production, especially replace the use of finite natural resources with the waste generated in different production processes, closing the cycles of the products [Bribián et al., 2011, p. 1138].

Additionally, the project has a high potential for commercialization and use of the results in practical applications. It is expected that the developed products will find their application not only in construction industry. Implementation of the new solutions by producers will increase their competitiveness in world markets. Modern design solutions will make companies to be more attractive for their potential customers and will lead to future spatial expansion according to the theory of sustainable development. The benefit for the members of the consortium is in breading of their knowledge in the particular field of interest as well in tightening of links among individual members within the cooperation in the frame of this project (see also Exploitatin of results).

Methodologies and technologies proposed to obtain goals

The development of new materials for industrial applications have a multistep form. It is necessary not only to prepare new composites, but also carry out exhaustive tests to determine their properties and to establish procedures for their use. The study is supposed to define the practical applicability and limitations of the proposed materials.

The research methodology chosen for the project is typical for technical sciences. Each proposed solution will be based on the literature search, previous experience and knowledge, and former fundamental research (conducted by the consortium members) which should assure that the solution is fully possible. The proposed research and the subsequent project WPs stem from the cognitive aspects and from the emerging possibility of materials development. The base of each WP is collaboration which is beneficial for all universities. Within the project the particular WPs will be either conducted by a chosen consortium or jointly but in that case the responsibility for the WPs will be divided between the members of the consortium according to their professional competence. In any case the research team will be appointed to the particular WPs according to its professional competence. For each WP the separate coordinator will be established in order to supervise its performance.

Each WP is logically linked with the preceding and the consequent WP and it regards both its substance and time-frame. According to the timetable of the implementation of the project the in–depth analysis of the issues connected with the project and the stage of designing the innovative materials must precede the laboratory tests intended to determine the crucial characteristics of the referred materials and to determine the best of the possible technological solutions connected with the proposed research. There are 5 thematically connected WPs in the project (see: Work plan). Their periods of completions overlap with one another, which allows for the feedback between the results of the works done in the particular WPs and therefore for the easy modification of the original assumptions whenever the obtained data indicates the need for making such correction. The underlying scientific methodology, data reduction and treatment schemes, type and degree of access to the equipment is described in each WP, because there are very diverse according to their multilateral character.

Brief CV of each partner

Project partners are universities and research institute from different countries and different culture. It is expected to create synergies between multilateral research units as well as individual researchers. The added value of multilateral cooperation is also exchange a new idea in unique cultural environment, especially because of different specialization of the partners. They have complementary area of expertise. Owing to the innovative nature of the project a lot of aspects and multidimensional analysis give an opportunity to cooperate in international team. The consortium as a whole is characterized by: high research potential; large experiences of partners in international and national research programs; high quality (high quality of publication with different research area); potential to dissemination and exploitation (experience in dissemination action and experience in cooperation with business in the area of projects results implementation); large scale of dissemination, because of the geographical area and also possibilities publication of the project results in national languages every partner.

Cracow University of Technology (Poland), leader, was established in 1954. It has of 7 faculties with 22 courses of study and many specialties, 17,000 students taking full-time courses, evening courses, extramural studies, Ph.D. studies, and post-graduate studies, with nearly 1,200 academic teachers overseeing their education. Due to our knowledge and commitment in that field and the thriving cooperation with innovative business companies, we have become a beneficiary of multiple grant programs. CUT was a leader 3 grands from Horizon 2020. It was also a leader or participant a grands from 7FP, 6FP and 5FP (38 projects). It also is a leader or partner in other internationals grant such a TEMPUS, ERASMUS+ and research programs. It cooperates with 38 countries in international or bilateral projects. Moreover, CUT has in its structure units specialized in the areas of technology transfer, protection of property rights and project management. At the university work The

Centre of Technology Transfer and the university is a founding shareholder in clusters of technology, the technology park and the initiator of activities including academic entrepreneurship spin offs. It gives the possibility of broad dissemination of project results.

The Faculty of Mechanical Engineering is relatively large department for Polish conditions. It employed here 255 person. The employment structure is as follows: MSc. - 44, PhD. - 152, PhD. DSc - 35, professors - 24. In addition, 101 employees as an administrative and technical staff. The faculty can give the doctoral degrees in three disciplines: mechanics, materials engineering, machine construction. At the faculty there is more than 60 PhD students. The faculty has 9 Institutes and 1 Independent Laboratory.

Nigde University (Turkey) is a public higher educational institution located in Niğde, Central Anatolia in Turkey. It has six faculties, two institutes, two colleges and six vocational colleges. The university campus is situated 6 km (3.7 mile) southwest of Niğde. In the project, there will be mainly the Faculty of Engineering. The staff of the faculty is over 100 person, including 12 professors, 21 associate professors, 38 assistant professors, 2 teaching assistants, 45 research assistants and 25 administrative staff have been working in this faculty. Besides its academic work, this faculty successfully completed many projects in national and international level and most are carried out actively. In addition to these projects, faculty members pioneers very important projects (R&D-SANTEZ, The Scientific and Technological Research Council of Turkey (TÜBİTAK), State Planning Organization, Ministry of Defence, Turkish Coal Enterprise and European Union (EU)) that will contribute to the development of country. In addition to educational activities, faculty members of this university are spending a very intense effort in order to conduct national and international projects effectively and to enhance the infrastructure of the faculty laboratories.

Catholic University of Peru (Peru) is a private university in Lima, Peru. It was founded in 1917 by Catholic priest Father Jorge Dintilhac SS.CC as Peru's first non-profit private institution of higher learning. Academically, PUCP ranks alternatively as first or second in Peru.It isthe only Peruvian university to be listed among the top five-hundred universities in the world in the international rankings. This placement is recognition of the quality of its education, research, publications, social responsibility, contribution to culture and indisputable institutional and academic leadership. It has11 faculties, 17 research centers and institutes and 47 labortories.

Riga Technical University (Latvia) is one of the oldest institutions of higher technical education in Eastern Europe. At present RTU with about 16000 students serves the needs of rapidly growing industry of the Baltic region. The Institute of Materials and Structures (IMS) of RTU has more than 30 years' experience in the field of modelling, analysis and optimisation of advanced composite materials and structures. In connection with its considerable experience and proven expertise on this question, IMS have participated in many Latvian and European scientific and technological projects: FRAMEWORK 5 (3 projects), FRAMEWORK 6 (11 projects: ALCAS, FRIENDCOPTER, CASSEM, FANTASIA, COCOMAT) and FRAMEWORK 7 (9 projects: COSMOS, DESICOS, MAPICC 3D, COALINE). Scientific results have been presented in more than 300 papers in international journals, 5 monographs and at many international conferences.

Babes-Bolyai University (Romania), is a public university in Cluj-Napoca, Romania. With more than 41,000 students in 2014, it is the largest university in the country. The Babeș-Bolyai University offers study programmes in Romanian, Hungarian, German, English, and French. The university was named after two prominent scientists from Transylvania, the Romanian bacteriologist Victor Babeș and the Hungarian mathematician János Bolyai. Babeș-Bolyai University has more than 41,000 students. The structure of the student body is composed out of over 1,200 PhD students, 8,600 master's degree students, and 27,500 undergraduates. The university has 21 faculties and over 1,500 faculty members. It offers bachelor's, master's, and PhD degrees, along with advanced postgraduate studies. The cooperation will be mainly with Faculty of Environmental Sciences and Engineering.

Universitatea Politehnica Timişoara (Romania) is a public university founded on November 11, 1920. Located in Timișoara, Romania, it is one of the largest technical universities in Central and Eastern Europe. The university's research and scientific training is based on the strategy of promoting multidisciplinary research and the priority given to new technology. In 2011, Politehnica University of Timișoara was classified as an advanced research and education university by the Ministry of Education, thus becoming the only university in Western part of Romania categorized among the best 12 university in the country. Politehnica University of Timișoara comprises 10 faculties and 25 departments which ensure modern, up-to-date, of a high professional level academic programs.

Universidad Católica del Uruguay (Uruguay), The Catholic University of Montevideo is a private university in Uruguay opened in 1985 (from various previous Catholic teaching institutions). Its full name is Universidad

Católica del Uruguay Dámaso Antonio Larrañaga, after Dámaso Antonio Larrañaga, and is a work of the Society of Jesus. Its main campus is spread out in six locations in Montevideo and 2 other campuses in Maldonado and Salto. The university is divided into seven departments: Business Sciences, Nursing and Health Technologies, Human Sciences, Law, Engineering & Technology, Dentistry and Psychology. The cooperation will be mainly with Engineering & Technology Departnent. The main area of activity this departnent are: Food Engineering, Electric Engineering, Engineering in Informatics, Engineering in High-power Electronic Systems, Telecommunications Engineering, Industrial Engineering, Informatics and Audiovisual Engineering.

The National University of Mar del Plata is an Argentine national university. The institution was established in 1962. The UNMdP currently includes 33 graduate and 35 post-graduate schools and nine faculties: Architecture, Urbanism and Design, Agricultural Sciences, Economics and Social Sciences, Natural Sciences, Health Sciences and Social Work, Law, Humanities, Engineering and Psychology.

8. Work plan

Project structure and individual work package description:

Title: The selection of waste materials (fly ash) to be hydrothermally alkalized and therefore turned into new material based on geopolymer matrix for construction application; **Time:** 1-12 month of project duration
Aim: Preparation of the theoretical concept for the new composites, analysis and optimization of the structure and mechanical properties and performance of designed composite materials and assessment of their materials for selected applications.
Supervisor: NU, **other partners involved:** BBU, CUT, PUCP, UNMdP
Scientific methodology: The study mainly based on desk research, the analysis will embrace: database of enterprises and product catalogues, literature databases on-line database that, among others, SCOPUS, paper publications, patents databases, tracking information on industry portals and on social networking sites (trade discussions). The task will be carried out a series of studies that will lead to the choice of some variants of the most promising composition (min. 5) according to partners experience. In particular, the following tests are performed: DTA/TG, chemical composition, RTG, density, BET, SEM/EDS, mechanical properties, temperature, corrosion resistance and leaching tests etc (BBU, CUT, PUCP, NU). The results of each study will be analyzed with conventional tools. That will be used for the analysis based on quantitative methods (i.a. statistical) and qualitative methods (depending on the type of the data obtained), as well as for computer-assisted analysis of the professional software. For example, in the analysis of SEM the resulting image will be analyzed with visual analysis and with computer analysis based on qualitative methods (CUT, UNESC, UNMdP). For the analysis traditional tools and computer programs will be used. Quantitative analysis will be performed with, among others, study of the chemical composition / content of the particular oxide.
Deliverables: The report being a result of research work carried out - defining gaps in the available solutions in the marketplace and preparation of publications / presentations at scientific conferences presenting the results of the comparative analysis on existing solutions and future market trends.
Milestone: Choosing min. 5 matrix for future tests (based on different ashes from different countries or regions).

Title: The selection of waste materials (natural fibres) as a fillers and therefore turned into new composites for construction application; **Time:** 3-15 month of project duration
Aim: The selection of most suitable waste fibres added to the hydrothermally alkalized fly ash in order to improve its properties
Supervisor: BBU, **other partners involved:** CUT, PUCP RTU, UCUDAL, UNESC
Scientific methodology: The task will be carried out a series of test based on matrix (WP1) and waste fibres such as: flax (PUCP, UBB), cellulose (UCUDAL, PUCP, UBB), wood (UBB, CUT) and also typical waste from regional economy (CUT, RTU, UNESC). The some variants of compositions with different values of fillers (usually between 1-20%) will be create. The next the new material will be tested according to basic properties such as: chemical composition (integration fibre and matrix), SEM/EDS, mechanical properties, temperature, corrosion resistance and leaching tests etc. The results of each study will be analysed with conventional tools.
Deliverables: The report - determination of the effect of additives on the properties of the matrix; materials for publication/ conferences.
Milestone: Choosing 5 promising compositions (matrix & fibre).

Title: Optimization using computer methods properties of new materials and structural elements made of them;
Time: 6-18 month of project duration
Aim: Analysis and optimization using computer methods of the structure and mechanical properties of

composites and the assessment of their ability to be used the construction materials.
Supervisor: RTU, **other partners involved**: UPT, UNMdP
Scientific methodology: The first step will be the numerical modeling material based on the results of research material obtained and literature research. The optimization will be made by specialist software and calculation based on the finite element method (RTU, UPT, UNMdP). The analysis of the impact of material properties of materials designed for the effort of the material and the substrate under the influence of environmental, thermal and mechanical loads. Then, on the basis of the available literature and standards for materials. This will allow for the development of geometric models for individual components and to perform numerical simulations on them (RTU, UPT).
Deliverables: The report contains the prepared material models and practical applications for their use; preparation of publications / presentations at scientific conferences presenting the results of the modeling
Milestone: Results of computer optimization for 5 elements - schemes to their production.

Title: The research into the application of new materials – comparison functional properties materials; **Time:** 18-30 month of project duration
Aim: Comparison between the new composites and the traditional materials in regard of their properties in laboratory
Supervisor: PUCP, **other partners involved:** CUT, UPT, RTU, UCUDAL, UNMdP
Scientific methodology: The further laboratory tests will be made for chosen materials. Prepared components with being exposed to the various environmental conditions i.a. aging test. In this stage will be carried out visual observations, mechanical properties tests, durability test, structure investigation (SEM) etc (CUT, RTU, UCUDAL). It could be kept to generate the link between these durability indices and mechanical properties as well as establish the essential parameters that are required for consideration in durability design. The results will be analyzed by the comparison between results for chosen composites for each partners. The results will be used to design and construct some prototype elements (PUCP, UPT, UNMdP). The partners in this task will be works simultaneously on the development of the new material (testing different addition) as well as design a prototype.
Deliverables: The report contains the results of the tests and preparing materials for scientific publication concerning the practical application of the new materials; materials for publication/ conferences.
Milestone: Development of compositions based on waste materials - optimized for the required basic properties of composites (selection on the basic of laboratory tests) and design the prototype solution for tests.

Title: Analysis of practical applications of new materials for construction application and testing prototype components in laboratory as well as validated it in relevant environment; **Time:** 24-36 month of project duration
Aim: Preparation of solutions and testing prototype components in lab as well as in relevant environment and comparison between the new composites and the traditional materials in regard of their properties in varying environmental conditions.
Supervisor: CUT, other partners involved: BBU, UPT, NU, RTU, UCUDAL
Scientific methodology: The suitable tests, will be made for chosen elements, in relevant environment (under actual working conditions on prototypes). Prepared components with being exposed to diifferent enviromental condition, including effects of periodically changing water sprinkling and sun radiation, complementing with standard frost resistance. The prototype will be subjected to cyclic changes, after which it is determined how its behaves examined include structure investigation and testing of mechanical properties of the element after a specified number of cycles. During this task, it is possible to establish cooperation between partners the results of tests (laboratory and in relevant environment) and discuss the possibilities of implementation of new materials and technologies developed (all partners).
Deliverables: Prototype and results of its tests in relevant environment; report and preparation of publications / presentations at scientific conferences presenting the results of the work; monograph.
Milestone: Test prototype in relevant environment.

Risk assessment

Scientific/technology: 1. Description of risk: technical problems with equipment; Level of likelihood: low; Proposed risk-mitigation: tests in the other universities; 2. Description of risk: low properties od composities with planned fibers; Level of likelihood: medium; Proposed risk-mitigation: change the fibers or choosing others waste fillers.

Management: 1. Description of risk: lack of cash flow, especially on the beginning of the project; Level of likelihood: medium; Proposed risk-mitigation: credit for financing the project from the partners institution; 2. Description of risk: conflicts among the partners ; Level of likelihood: low; Proposed risk-mitigation: Leader (PK) mitigates conflicts among partners; decisions will be made on the basis of consensus (voting). In case of lack of

agreement, the Coordinator (Project Manager) will have the casting vote; 3. Description of risk: delays in project; Level of likelihood: medium; Proposed risk-mitigation: proper construction of schedule, monitoring, possibilities of using external support

Commercial risks: Description of risk: new competitive technology; Level of likelihood: low; Proposed risk-mitigation: monitoring during the project market trends

Viability and feasibility of the proposal

Project partners are universities from different countries and different culture. It is expected to create synergies between multilateral research units as well as individual researchers. The added value of multilateral cooperation is also exchange a new idea in unique cultural environment, especially because of different specialization of the partners. They have complementary area of expertise. Owing to the innovative nature of the project a lot of aspects and multidimensional analysis give an opportunity to cooperate in international team, especially about ethics aspect depended on cultural differences and/or perception by the public ethical issues.

On one hand, the specialist form chemistry benefit from the mutual collaboration with the mechanical/ material engineers (researchers form technical science) because they will get brand new research methods to their needs and requirements as well as new techniques. Moreover, they will also get useful knowledge concerning the importance of environmental aspects of the analysed projects. The consortium as a whole is characterized by: high research potential, large experiences of partners in international and national research programs, high quality (high quality of publication with different research area), potential to dissemination and exploitation (experience in dissemination action and experience in cooperation with business in the area of projects results implementation), large scale of dissemination, because of the geographical area and also possibilities publication of the project results in national languages every partner, multidisciplinary character (chemistry, mechanical engineering, civil engineering, material engineering and environmental sciences).

The profiles of partners match the project's objectives. The partners were chosen to each WP according their area of expertise. The members complement one another according their fields of specialization.Thanks to their experiences partners be able to work effectively together (see: Technical and scientific description and Partners).

There is also planned a common work for after the project. Thanks to cooperation it is possible to large scale of dissemination of the project results (because of the geographical area and also possibilities publication of the project results in national languages every partner). The whole partners will be involvement in dissemination and explanation activities. It gives also a large potential market for application new solutions and possibilities to entrance to world market. The collaboration will bring benefits for large scale.

Monitoring and management of the project

The project will be managed on the basis of overall methodology dedicated to research project and the procedures each partner imposes for international projects on his own. The person responsible for scientific management of the project will be responsible for organizing the whole project, and monitoring its progress and effects (results) and for Intellectual Property Rights (IPR) management and innovation and ethics aspects. Each partner will appoint a coordinator for units. The person responsible for the scientific management of the project (project manager) with the support of persons responsible for administrative and financial management of the project will be responsible for risk management and quality assurance. The project execution will be under the supervision of the Leader.

The management of the project will be performed in a way to ensure active role of each of the partners: management plan with milestones and clear tasks for each partner. The overall development of the project will be managed by a project manager with support of projects council composed of representative of each partner organisation. This body will monitor the project progress with respect to the main objectives. The coordinators for each units will be responsible for financial management of the organizations and contacts with Nationals Founding Organizations.

The project will be monitoring/evaluated every 3 months on the basis of reports and monitoring research tasks and additionally each key point. At the end of each WP there will be a summary of the results. Additional element will be a participation in conferences, where results of research will be presented (it will be the opportunity for the team project to make the summary of the results of every tests and to organize them). There are planned different ways of communication in the project. It will be based on both traditional collaboration

(team meetings) and modern ways of communication (via the Internet). There are planned min. 7 project meetings, they will be connected with scientific seminary (presenting results of the project): Kick-off project meeting in Poland (Cracow), meeting in 1-3 month, joined with workshop; Project meeting in Lima (Peru) meeting in 9 month, joined with seminary; Project meeting in Nigde (Turkey) meeting in 15 month, joined with seminary; Project meeting in Mar del Plata (Argentina) meeting in 20 month, joined with seminary; Project meeting in Riga (Latvia) meeting in 25 month, joined with seminary; Project meeting in Montevideo (Uruguay) meeting in 30 month, joined with seminary and closing conference in Cluj-Nepoca or Timisoara (Romania) in 35-36 month.

The internal communication will be managed through the system of electronic mailing lists structured in accordance with the project needs (general mailing list, thematic clusters' mailing lists, executive mailing list), thematic fora and collaborative working functionalities provided by the project website. The project plans to run quarterly tele/skype-conferences with all participants. As to external communication will be provided via leader (CUT or other authorized partner); dissemination on the project goals, activities and impacts will be in the hands of all partners involved in the project. The communication will have to respect the commonly agreed rules and standards.

9. Transnational/EU-CELAC related benefit & added value

Project partners are universities and research institutes from different countries and different cultures. They have also coherent competences. It is expected to create synergies between research units and individual researchers - exchange of researchers and experience (see also: Explotation of results). There is also planned a common work for the monograph and scientific articles. Thanks to cooperation it is possible to large scale of dissemination of the project results (because of the geographical area and also possibilities publication of the project results in national languages every partner).

The added value of multilateral cooperation is also exchange a new idea in unique cultural environment. It is important for the project meeting EU and CELAC tradition for solving a common problems. The benefit for the project can be different approach to the process of production and management both of the culture. It helps create more universal methods for new project application and design of environmental friendly process of waste utilization and creation new, composities. Thanks to multilateral cooperation it will be more complex and more aspects of the potential market risk related to new implementation will be taken into account. It is also possible to transfer to each country 'the best practices' (methods of scientific work, cooperation with other partners etc.).

There is also added values of multilateral cooperation, because of different specialization of the partners. They have complementary area of expertise. The new material design is a complex problem. On one hand, the engineers benefit from the mutual collaboration with the materials science researchers because they will get brand new materials tailored to their needs and requirements as well as new environmental friendly techniques. Moreover, they will also get useful knowledge concerning the importance of physical-chemical aspects of the materials they deal with, which is particularly crucial when it comes to raising awareness of their eco-friendliness. As such, it is crossing the border of the classical research field and may contribute to the further development of the more scientific approach to existing practices. On the other hand, thanks to the project materials science specialists will have the opportunity to manufacture and thoroughly test a new class of materials which should be cheap, very durable and still suitable for construction needs. Owing to the innovative nature of the project such materials will be produced mainly from currently useless industrial wastes (fly ash from coal combustion in CHP power plants and other wastes) which should greatly contribute to environment protection decreasing the amount of wastes placed in landfills.

The multilateral cooperation can bring also results for economy collaborating countries the new product(s) will be attractive because of the same environmental problems in EU as well as in CELAC (economic waste utilization and protective an environment). It gives a large potential market for application new product(s) and possibilities to entrance to global market. The collaboration bring benefits for large scale.

10. Exploitation of results and -if applicable- economic impact

Scientific and technological impact of the project, in terms of concrete applications (scientific, technological, innovative)

The benefit for the members of the consortium is in breading of their knowledge in the particular field of interest

as well in tightening of links among individual members within the cooperation in the frame of this project. The project will have an influence to engagement organization such as: development of competence of the research team; exploration of new field of science (especially multi-disciplinary cooperation); growth experience of each of the project participants in the field of implementation research and / or management them; effective use of university research infrastructure; establishing cooperation between universities and companies with different countries - the project will involve people from different research units; gaining interesting material for international publications; research project will lead to the development of original solutions that will be based on the results of the research, which will make the unit will have innovative solutions that can provide a basis for future grants of an implementation carried out in collaboration with other partners.

Scientific and technological impact - short-term outcomes (measurables):

- dissemination of information about research results by the means of articles, scientific publications; it also strength an scientific experience researchers engagement into the project – min. 16 publications;
- dissemination of information about research project/new products in conferences – min. 8 conferences participation;
- workshop (joined with kick-off meeting) - min. 1 workshops;
- exchanging an knowledge during the projects meeting (presentation research results and discuss about it) - min. 6 meetings;
- dissemination by organization of conference and seminary and conference materials – min. 5 seminaries and/or conferences (connected with project meetings: 2, 3, 4, 5, 6).
- the ability to perform subsequent projects, applying for a further research project is a continuation of research conducted under the project (number of applications submitted) – min. 2 applications to different R&D programs (before the end of the project);
- the increase in quality of staff through opportunities for MS, PhD and D.Sc/Prof. devoted manufactured products (to get achievements, which will be the basis for a doctoral dissertation or part of the acquit to the D.Sc/Prof.) – min. 1;
- website as a repository for the learning materials generated and trialled through the project – min. 1;
- publication of monograph about eco-friendly solution – min. 1;
- reports after WPs, presented summary of research activities (WP 1-5) – min. 5;

Other scientific and technological impact for each partner (sustainability of cooperation)

- development of competence of the research teams for each partners: research excellence;
- development of competence of network;
- growth experience of each of the project participants in the field of implementation research and / or management them;
- effective use of university research infrastructure;
- gaining interesting material for international publications:common publication, especially comparative research between countries (e.g. different needs for economy, comparison for successful implementation of technical solutions)
- gaining interesting material for future research projects (national and international): research project will lead to the development of original technical solutions that will be based on the results of the research, which will make the unit will have innovative solutions that can provide a basis for future grants of an implementation carried out in collaboration with industry.

Scientific and technological impact - long-term outcomes:

- creating enviroment for possibilities of future cooperation in different research tasks; knowledge about common area of research activity will be base for future training cooperation; establishing cooperation between research centers from different countries - the project will involve people from different research units: cooperation agreement, possibilities of new projects, students internships etc.;
- new possibilities - research project will lead to the development of original technical solutions that will be based on the results of the research, which will make the unit will have innovative solutions that can provide a basis for future grants of an implementation carried out in collaboration with industry;
- development of researcher mobility - international exchange of researchers from R&D entities and industrial partners is encouraged. During the project is planned cooperation between universities, research institutes and enterprises - exchange of researchers and experience.

Publications (if applicable)

Articles:

It is expected to publish high-quality scientific work in leading publications of material science (Journal of Advanced Functional Materials, Journal of American Ceramic Society, Journal of the European Ceramic Society etc.). There are predicted mainly scientific articles in English - min. 16 publications (2 per one university in the project). It is expected that in one publication there will be engagement minimum 2 persons from different universities. It will be also possible some national publication that support dissimination process (also in local languages) - the estimated number: 8 (one per university). They may be connected with seminary or participations with conferences.

Monograph:

There is planned one publication of monograph about eco-friendly solution on the end of the project. It will be described project experiences and the results of research works. It is plannea as a collective work (the book will be integrate the articles connected with project.

Management of intellectual property issues

In the project there are predicted some Intellectual Property Rights (IPR) to create. The person responsible for scientific management of the project will be responsible for organizing the whole project, and monitoring its progress and effects (results) and for Intellectual Property Rights (IPR) management. He will be in touch in the proper administrative support (law department) on the leader university.

The project there is also planned for the composite patent application for which will be obtained the best results. Potential recipients of the results of the project are industrial companies, both from the construction sector and companies working on materials for special tasks or solving other construction tasks.

Outline the strategy for knowledge management and protection is generally open access (both the ‘green’ or ‘gold’ model). The research results will be published in article that will be immediately provided in open access mode by the scientific publisher. The associated costs with publishing will be shifted away from the organization (according to available resources). Monograph and conference materials will be archived by the researcher in an online repository after its publication (also some articles), especially trough repository of project leader CUT (on-line access for free).

Commercial exploitation and/or impact

The research is connected with design of new materials, especially the application of geopolymers matrix with different kind of waste fibers. The results of it can be applicate into practice. The results of the project can be also potentially interesting for government institutions planning to increase the activities connected the enviromental protection. Expected markets outputs for the new materials is development of eco-friendly composite materials from waste fibers for the world market the products based on waste fibers. Exemplary:

when the producer of this kind elements enters the world market with new technology (development in the project), especially to the countries with high public awareness of ecological solutions, there is an estimated growth of each company profit ca. 10% as well as the adequate number of employees hired for the production; the cost reduction is estimated ca. 15% for material costs of elements and it is also connected with waste limitation and fulfil of international and national law connected with recycling and reusing of materials.

The project predict that the research results will be possible to practical application. There are connected with design new composites and creating useful materials. The results of it can be applicate into industrial companies, both from the construction sector and companies working on materials for special tasks or solving other construction tasks.The implementation of the new solutions by EU and CELAC producers will increase their competitiveness in world markets. Modern design solutions will make companies to be more attractive for their potential customers and will lead to future spatial expansion according to the theory of sustainable development.

Implementation of project results, future strategy etc. and other valorisation potential

The project proposals based on the state-of-the-art and create a new value. There are proposed a solution that are beyond the current market application, but there are answer for market needs. The project has a high potential for commercialization, and developed the results will be the possibility of practical application. The project is planned for the patent application for which will be obtained the best results. The project results have a high potential for commercialization and use of the results in practical applications. The future plan is to

develop the business plan for results of the project.

The anticipated benefits from the implementation of the project results, are correlated to requirements of potential recipients. The mainly expectations towards new materials are: durability, better or similar working parameters in compare to currently used material and friendliness for enviroment, cost-effectiveness, and also architectural attractiveness. It is also important to avoid the production of materials affecting the natural resources. It is necessary to promote the use of the best techniques available and innovation in production, especially replace the use of finite natural resources with the waste generated in different production processes, closing the cycles of the products (or using waste). Potential recipients of the results of the project are industrial companies (mainly private, but also public one), both from the construction sector and companies working on materials for special tasks or solving other construction works.

The future strategy will be supported by:

1. Development the LCA/LCC analysis confirm that new materials will be environmental friendly. There allow to reduce an amount of energy during production process and there can be recycled or reused several ways (depending on local conditions).

2. Analysis of law aspect of introducing a new products. There were identified some legal barriers in particular applications such as obtaining relevant certificates for building materials. The materials will be development in the areas, where it is possible to enter on the market with new products without additional certificates, as well as in the area where there are required (but taking it under consideration).

3. Development of business plan or feasibility study for particular products and/or applications. It willcontain a go-to-market strategy which will define the segments and the commercial targets for particular solution. This has to be done along with a coherent industrial development strategy (particular market) to keep a certain technological advance against potential direct competitors.

4. Development the produstes, including demonstration and validation of the technical and economic viability of a new solutions (technologies / products) in an operational (or near to operational) environment.

5. Product commercialisation by spin-off or licensing.

The project will have potential impact to specific group such as researchers, companies, the other interested organization (non-profit organization, especially focused on environmental issues), the policy making institution and whole society. The results of the project are of interesting mostly for companies, but some of them can be potentially interesting for government institutions planning to increase pro-ecological activities and trough this also for whole society.

11. Experience of participants

Cracow University of Technology (CUT) [coordinator]

Name & Surname: Janusz Mikuła

Academic and Research Career:

Associate Professor PK has 30 years of experience in conducting research - and development. He currently works as Director of the Institute of Materials Science and Engineering. From 16 August 2006 to 12 January 2009, he was undersecretary of state in the Ministry of Regional Development. He headed numerous projects for industry, research commissioned by the operators and R & D projects implemented for businesses. He has participated in research projects co-financed from external sources. In the last year, under his leadership were implemented numerous commissioned works for industry. In recent years, he also co-patent with the potential implementation.

With its commitment to work for the industry, he was awarded, among others, Order of Commander for his contribution to innovation and inventiveness. Brussels 23.11.2007. BRUSSELS EUREKA Merites De L'Innovation. Author and co-author of approx. 40 research works, approx. 70 scientific publications in scientific journals and scientific-technical, approx. 100 scientific papers and popular science in the field of environmental protection, approx. 100 environmental impact assessments, environmental impact forecasts, waste management plans and environmental programs and applications for integrated permits, co-author of 4

professional computer programs and 8 books.

He has also experience in project management. He is/was a coordinator (exemplary projects):

- 01-01-2015 – 31-12-2016, Coordinator at Cracow University of Technology the project co-funded from national sources (GEKON 1): 'Innovative and Environmentally Safe Methods of Disposal of Dust, Ash and Slag from Waste Incineration Plants and Other Industrial Combustion Processes' (2015-2016), http://www.ekomobruk.pl/
- 01-12-2013 – 30-11-2016, coordinator of the Polish part - the project: „Modernization of two cycles (MA, BA) of competence-based curricula in Material Engineering according to the best experience of Bologna Process" (543994-TEMPUS-1-2013-1-BE-TEMPUS-JPCR), acronim: MMATENG, grant LIFELONG LEARNING (TEMPUS & BILATERAL COOPERATION WITH INDUSTRIALISED COUNTRIES) contract no 2013 – 5505/001-001 with Education, Audiovisual and Culture Executive Agency (EC).
- 18-06-2012 – 31-12-2015, project coordinator, 'Materials Engineering - engineering of the future' project no. UDA-POKL.04.01.02-00-047/12-00, project co-financed by the European Union under the European Social Fund (Human Capital).

List of patents:

Patent, 08.29.2014, *The use of tuff to strengthen sintered copper matrix composites, sintered copper-based composite particles sustained by tuff and a method for producing sintered copper matrix composite straighten tuff*, Polish Patent Office, No. EN 217 818 B1

Publication (5 selected):

- Grela, A., Hebda, M., Łach, M., Mikuła, J. (2016): 'Thermal behavior and physical characteristics of synthetic zeolite from CFB-coal fly ash', Microporous and Mesoporous Materials, 220, p. 155-162.
- Monography, 2015, 'Innovative, Cost-Effective and Eco-friendly Fibre-based Materials for the Construction Industry', Mikuła J., Korniejenko K. eds., Publisher Cracow University of Technology, Cracow, pp. 140.
- Monography, 2014, 'Environmentally-friendly solutions in the field of production. Innovative and eco-friendly composite materials', Mikuła J. ed., Publisher Cracow University of Technology, Cracow, pp. 287, ISBN 978-83-7242-780-9.
- Monography, 2014, 'Environmentally friendly solutions in the field of production. Eco-innovation in the production process', Mikuła J. ed., Publisher Cracow University of Technology, Cracow, pp. 287, 261, ISBN 978-83-7242-781-6.
- Mikuła J., Kuciel S. (2013), *Waste management and plastic recycling*, Publisher Cracow University of Technology, Cracow, ISBN 978-83-7242-747-2.

Nigde University (NU)

Name & Surname : Neslihan DOĞAN SAĞLAMTİMUR

Academic Experience and Positions Held

2014 - Assoc. Professor Dr., Department of Environmental Engineering, Faculty of Engineering, Nigde University, Niğde;
2009-2014, Assistant Professor Dr., Department of Environmental Engineering, Faculty of Engineering and Architecture, Nigde University, Niğde
2008-2009, Research Assist. Dr., Department of Environmental Engineering, Faculty of Engineering and Architecture, Nigde University, Niğde
2007-2008, Research Assist. Dr., Department of Chemical Oceanography, Institute of Marine Sciences, Middle East Technical University, Erdemli-Mersin
2000-2007, Research Assist., Department of Chemical Oceanography, Institute of Marine Sciences, Middle East Technical University, Erdemli-Mersin
1999-2000, Research Assist., Graduate School of Natural and Applied Sciences, Middle East Technical University, Ankara
1998-1999, Research Assist., Department of Environmental Engineering, Faculty of Engineering and Architecture, Nigde University, Niğde

Administrative Experience and Positions Held

Vice Head of the Environmental Engineering Department, Nigde University (2013 -); Member of the Graduate School of Natural and Applied Sciences, Nigde Uni. (2009-2010); Member of the Engineering and Architecture Faculty, Nigde University (2009-2010); Head of the Environmental Engineering Department, Nigde University (2009-2010)

Research Projects - As Principal Investigator

1. Doğan Sağlamtimur N., Turaç E., Arabacıoğlu R., "Use of Walnut Shell to Produce Dye: A Reuse Study", Nigde University BAP Project, Project Number: FEB 2016/04-BAGEP, 02.03.2016 -
2. Doğan Sağlamtimur N., Kalın M.A., "Determination of Electromagnetic Pollution in the Regions in which Base Stations and Mobile Phones are Intensively Used: Nigde Case", Nigde University BAP Project, Project Number: FEB 2013/42-BAGEP, 2015.
3. Doğan Sağlamtimur N., Subaşı E., "Waste Reception Facilities: Projection, Operation, Status in the World and Turkey", Nigde University BAP Project, Project Number: FEB 2009/12, 2010.
4. Doğan Sağlamtimur, N., Subaşı E., "Waste Reception Facilities in Turkey: Pollution Prevention Approach", Nigde University BAP Project, Project Number: FEB 2009/05, 2010.

As Co-Investigator / Researcher or Reporter - almost 20 projects

LIST OF PUBLICATIONS (5 selected)

1. N. Doğan-Sağlamtimur, A. Bilgil, G. Yıldırım, T. Cila, Ü. Doğuç. K. Erkekli "Effect of Fly Ash Contribution to the Physical and Mechanical Properties of Cemented Pumice Based Lightweight Wall Material", *Fresenius Environmental Bulletin,* in review.

2. Doğan-Sağlamtimur, N., Bilgil, A., Dursun, M., Akbulut, H., Erkekli, K., Yıldırım, S., "Producibility of Pumice-Based Lightweight Construction Material from Coal Bottom Ash Supplied from Two Industrial Factories: Findings from An Experimental Study", *Journal of Environmental Protection and Ecology*, accepted for publication.

3. N. Doğan-Sağlamtimur, A. Bilgil, M. Demir, M.L. Yılmaz, S. Polat, E. Özen, H. Dördü, "A Reuse Study from Niğde, Turkey: The Conversion of Industrial Ash to Geopolymer", *Desalination and Water Treatment*, 57, 6, 2604-2615, DOI: 10.1080/19443994.2015.1070286 (2016).

4. T. Satır, **N. Doğan-Sağlamtimur**, "Adaptation of Port Waste Reception Facilities to Ballast Water Treatment System: Turkish Port Perspective", *Fresenius Environ. Bull.*, 23, 11a, 2895-2898 (2014).

5. E. Subaşı, **N. Doğan-Sağlamtimur**, "Performance Evaluation of the Martaş Port Waste Reception Facility Treatment Plant (Tekirdağ, Turkey)", *Desalination and Water Treatment*, **51**, 13-15, 3040-3046, DOI: 10.1080/19443994.2012.748454 (2013).

Pontificia Universidad Católica del Peru (PUCP)

Name & Surname: Javier Nakamatsu, Profesor (Chemistry)

Work place: Departamento de Ciencias - Sección Química, Pontificia Universidad Católica del Perú

Education:

PHD: Louisiana State University, USA, 1995
MSC: Pontificia Universidad Católica del Perú, 1989

Publicationes (up to 5):

NAKAMATSU, J.; Gomez, C.; TORRES, F. G.; TRONCOSO, O. P. y GRANDE, C. J. (2008). Characterization of the nanocomposite laminate structure occurring in fish scales from Arapaima Gigas. Materials Science and Engineering: C, 28 (8), pp. 1276-1283. Recuperado de www.elsevier.com

NAKAMATSU, J.; Boccaccini, A.; Min-Lin, y.; TORRES, F. G. y TRONCOSO, O. P. (2006). Processing and characterization of porous structures from chitosan and starch for tissue engineering scaffolds. Biomacromolecules, 7 (12), pp. 3345-3355. Recuperado de pubs.acs.org

KIM, S.; NAKAMATSU, J.; Maurtua, D. y Olivera, F. (2016). Formation, antimicrobial activity, and controlled

release from cotton fibers with deposited functional polymers. Journal of Applied Polymer Science, 133, pp. 43054. Recuperado de http://onlinelibrary.wiley.com/doi/10.1002/app.43054/abstract

NAKAMATSU, J. (2012). La Quitosana. Revista de química (PUCP), 26 (1-2), pp. 10-12. Recuperado de http://revistas.pucp.edu.pe/index.php/quimica

ELGEGREN, M.; TIRAVANTI, G. J.; ORTIZ, B. A.; OTERO, M. E.; Wagner, F.; Cerron, D. A. y NAKAMATSU, J. (2012). Reciclaje Químico de Desechos Plásticos. Revista de la Sociedad Química del Perú, 78 (2), pp. 105-119.

Riga Technical University (RTU)

Name & Surname: Jānis ŠLISERIS - Senior researcher, assistant professor

Work experience:
18/10/2013-now; Senior researcher; Investigation of new structures and materials, RTU
1/6/2013-1/6/2015, Postdoc; Investigation of wood fiber boards, optimization of technological manufacturing process
Fraunhofer Institute for Industrial Mathematics ITWM,
30/12/2011-18/10/2013, Researcher. Investigation of new structures and materials, RTU
2009-2011, Scientific assistant, Investigation of new structures and materials, RTU
2007-2009, Civil engineer, Analysis and design of load bearing structures, SIA „IG-Kurbads”
2006-2007, Building calculations, Analysis of construction prices, SIA „Salacas būve”
09/2010-05/2013, Dr.sc.ing., Constructions, structural analysis, theory of elasticity and non-elasticity, numerical methods, building physics, Riga Technical University, full time studies, Doctoral studies
09/2009-07/2010, Professional master degree (with excellence)/ professional master degree in civil engineering, Constructions, mechanics of materials and constructions, structural analysis (statics and dynamics), numerical methods, building physics, Riga Technical University, full time studies

Master degree studies:
09/2008-07/2012, Bachelors degree of natural sciences in mathematics, Calculus, ordinary and partial differential equations, mathematical physics, numerical methods, statistics, University of Latvia, full time studies, Bachelor degree studies
09/2005-07/2009, Professional bachelor’s degree and engineer qualification in civil engineering, Constructions, mechanics of materials and constructions, structural analysis (statics and dynamics), numerical methods, building physics, building technologies, English, psychology and social sciences. Riga Technical University, full time studies

Participation in scientific projects:
1/6/2013-now, “Simulationsgestützte Entwicklung von mitteldichten Faserplatten für den Leichtbau“ number IGF 17644N, Leading researcher.
6/1/2014-15/12/2014. “Rational use of Wood-fibre plates in lightweight constructions with increased specific strength and stiffness“ financed by “Baltish-Deutsches Hochschulkontor”. Project head, Leading researcher.

15/11/2013-14/11/2014, “Coupled micro and macro simulation method for load bearing plates of wood fiber composites“ Riga Technical University Scientific Research Project Competition for Young Researchers No. ZP-2013/00. Project head, Leading researcher.

Publication (up to 5):

1. Šliseris, J., Yan, L., Kasal, B. Numerical Modelling of Flax Short Fibre Reinforced and Flax Fibre Fabric Reinforced Polymer Composites. Composites Part B: Engineering, 2016, Vol.89, pp.143-154.
2. J. Sliseris, H. Andrä, M. Kabel, B. Dix, B. Plinke, Virtual Characterization of MDF fiber network. European Journal of Wood and Wood Products, 2015, submitted.
3. Šliseris, J., Andrae, H., Kabel, M., Wirjadi, O., Dix, B., Plinke, B. Estimation of Fiber Orientation and Fiber Bundles of MDF. Materials and Structures, 2015, 2015, pp.1-10.
4. Frolovs, Ģ., Rocēns, K., Šliseris, J. Glued Joint Behavior of Ribs for Wood-Based Composite Plates. IOP Conference Series: Materials Science and Engineering, 2015, Vol.96, Iss.1, pp.012048-012048. ISSN 1757-8981. e-ISSN 1757-899X. Available from: doi:10.1088/1757-899X/96/1/012048
5. Frolovs, Ģ., Rocēns, K., Šliseris, J. Comparison of a Load Bearing Capacity for Composite Sandwich

Plywood Plates. In: Environment. Technology. Resources : Proceedings of the 10th International Scientific and Practical Conference, Latvia, Rēzekne, 18-20 June, 2015. Rēzekne: Rēzeknes Augstskola, 2015, pp.39-45. ISBN 978-9984-44-171-9. ISSN 1691-5402. e-ISSN 2256-070X. Available from: doi:10.17770/etr2015vol1.633

Babes-Bolyai University (UBB)

Name & Surname: Gabriel Furtos

Working experience

June 2000 – present, Researcher, at Laboratory of Composite Materials, Department of Dental Composite Materials, University of Babes-Bolyai Institute of Research in Chemistry Raluca Ripan, Cluj-Napoca, Romania.
August 2005 – present Researcher, Laboratory of Dental Materials, Remed Prodimpex S.R.L., Cluj-Napoca, Romania;

Education

September 2010 – September 2012, PostDoc in Biomaterials Science at the University Babes-Bolyai, in Biomaterials Science at the University Babes-Bolyai, Cluj-Napoca, Romania / Raluca Ripan Institute of Research in Chemistry, Department of Dental Composite Materials Research subject: “Scaffolds and bone cements for medicine applications”
September 2001– April 2006, Ph.D. in Biomaterials Science at the University Babes-Bolyai, Cluj-Napoca, Romania / Raluca Ripan Institute of Research in Chemistry, Department of Dental Composite Materials, Research subject: “Research on dental composites and scaffold materials used for bone replacement”
September 1998– June 1999 , M.Sc. in Organometallic and Coordination Chemistry, Babes-Bolyai University of Cluj-Napoca, Romania

International projects:

Action Management Committee (MC) members for Romania in the projects: COST ActionTD0903 “Understanding and manipulating enzymatic and proteomic processes in biomineralization - towards new biomimetic strategies, the creation of tailored nano-scale architectures and environmental monitoring” (17/11/2009-16/05/2014); COST Action TD0906 “Biological adhesives: from biology to biomimetics” (18/05/2010- 17/05/2014); COST Action MP1206 “Electrospun Nano-fibres for bio inspired composite materials and innovative industrial applications” (23/05/2013-22/05/2017); COST Action MP1301 “New Generation Biomimetic and Customized Implants for Bone Engineering” (02/10/2013- 01/10/2017); COST Action TD1305 “Improved Protection of Medical Devices Against Infection (IPROMEDAI)” (14/11/2013- 13/11/2017); COST Action CA15114 “Anti-MIcrobial Coating Innovations to prevent infectious diseases (AMICI)” (15/04/2016-14/04/2020)

Scientific contributions – patents: more than 10

Publications (up to 5):

1. Baldea B, Silaghi-Dumitrescu L, Furtos G. Fracture load and force load at upper yield of alkaline-resistant glass fiber-reinforced endodontic posts. Polymer Composites (accepted), DOI: 10.1002/pc.23583
2. Furtos G, Baldea B, Silaghi-Dumitrescu L. Development of new radiopaque glass fiber posts. Materials Science and Engineering C 2016; 59(1), 855–862
3. Furtos G, Naghiu MA, Declercq H, Gorea M, Prejmerean C, Pana O, Tomoaia-Cotisel M. Nano forsterite biocomposites for biomedical application: Mechanical properties and bioactivity. J Biomed Mater Res Part B: Appl Biomater 00B: 000–000, 2015.DOI: 10.1002/jbm.b.33396
4. Furtos G, Tomoaia-Cotisel M, Baldea B, Prejmerean C. Development and characterization of new AR glass fiber reinforced cements with potential medical applications. J Appl Polym Sci, 2013; 128(2): 1266–1273.
5. Furtos G, Silaghi-Dumitrescu L, Moldovan M, Baldea B, Trusca R, Prejmerean C. Influence of filler/reinforcing agent and post-curing on the flexural properties of woven and unidirectional glass fiber reinforced composites J Mater Sci, 2012; 47:3305-3314

Catholic University of Uruguay Damas Antonio Larrañaga (UCUDAL)

Name & Surname: Martin Duarte Guigou - Professor at Universidad Católica del Uruguay

Experience:

since June 2008, Professor Universidad Católica del Uruguay
since March 2008, Research Director the Tubacero S.A.

Education:

2005 – 2007, Universidad de Alicante, Doctor of Philosophy (PhD), Materials Science
2003 – 2005, Universidad de Alicante, Master of Science (M.Sc.), Materials Science,
2003-2004, Research Pre-Doctoral Student Grant - ADEMAT Network,
2004-2007, Research Pre-Doctoral Student Grant - Universidad de Alicante,
1997 – 2003, Universidad Tecnológica Nacional, Facultad Regional Concepción del Uruguay, Engineer's degree, Electromechanical Engineering

Publication (up to 5):

- FA García, P Campoy, J Mochón, I Ruiz-Bustinza, LF Verdeja, RM Duarte, 2010, A New "User-friendly" Blast Furnace Advisory Control System Using a Neural Network Temperature Profile Classifier, ISIJ international 50 (5), 730-737.
- M Duarte, I Vragovic, JM Molina, R Prieto, J Narciso, E Louis, 2009, 1/f noise in sliding friction under wear conditions: The role of debris, Physical review letters 102 (4), 045501.
- RM Duarte, I Ruiz-Bustinza, D Carrascal, LF Verdeja, J Mochon, A Cores, 2013, Monitoring and control of hearth refractory wear to improve blast furnace operation, Ironmaking & Steelmaking 40 (5), 350-359.
- M Duarte, JM Molina, R Prieto, E Louis, J Narciso, 2007, Self-similar fluctuations and 1/f noise in dry friction dynamics, Metallurgical and Materials Transactions A 38 (2), 298-305.
- R González, MA Barbés, LF Verdeja, I Ruiz-Bustinza, J Mochón, MR Duarte, Mirosław Karbowniczek, R Migas, 2011, Mechanisms knowledge of the flow and wear in the blast furnace crucible with the nodal wear model, Metallurgy and Foundry Engineering 37 (2), 123-132.

University of Mar del Plata (UNMdP)

Exequiel Santos Rodríguez

Current Position:
- Independent Researcher – National Science and Technology Council (CONICET)
- Professor at the Materials Engineering Department, Engineering Faculty – University of Mar del Plata
- Group Leader (Advance Composite Materials Group)

Studies:
Postgraduate (2001-2005), Tíitle: PhD in materials science, University of Mar del Plata, Thesis Title: Composite materials made with natural fibers and thermosetting matrices processed by RTM
Graduate (1995-1999), Tittle: Materials engineer, University of Mar del Plata,

Research Projects:
Project PIP 2015-2016: Surface functionalization of composite materials for the energy sector. Role: Co-director. Budget: U$S 48.000
Project PICT2013 2455 (2014-2016). Development of high performance composite materials for the aerospace industry. 2014-2016. Budget: U$S 19000. Role: Director.
International cooperation Project CONICET/CNRS (2011-2013). Name WEPLAC: Effect of a PHB treatment to improve Wettability of Plant fibres in Composite materials processing. Leaders: Exequiel Rodríguez (Argentina), Laurent Bizet (France).
Project PICT2008 1628 (2010-2011). Optimization of the mechanical properties of vinyl ester/natural fibers composites processed by RTM. Budget: U$S35000. Role: Director.

Technological Projects
In cooperation with the National Space Agency (CONAE), 2015-2016. Project: Development of linerless composite tanks for the Tronador II rocket. Budget: U$S 150000
In cooperation with the National Space Agency (CONAE), 2012-2014. Project: Development of thermosetting resins for different components of the Tronador II rocket. Budget: US$ 95000
In cooperation with YPF, 2010-2014. Project: Development of glass fiber/epoxy resin linepipe for oil transport at high temperatures. Budget: US$ 1225000

International Stays
Invited professor at the “Laboratoire Ondes et Milieux Complexes (LOMC)”, University of Le Havre, France. May and April 2011 and May 2013
Research Activities at the University of Perugia, Italy. May and April 2002. Project: ECOFINA (Ecoefficient Technologies and Products Based on Natural Fiber Composites).

Publications (up to 5):
- Francucci, G; Vázquez, A, Ruiz, E; and Rodríguez, E. (2012). Capillary effects in vacuum assisted resin transfer molding with natural fibers. Polymer Composites, 33(9): 1593–1602.
- Francucci G, Rodriguez E y Vázquez A. (2010). Study of saturated and unsaturated permeability in natural fiber fabrics. Composites Part A, 41(1): 16-21.
- Rodríguez, E.; Stefani, P.; Vázquez, A. (2007). Effects of fibers alkali treatment on the resin transfer molding processing and mechanical properties of jute-vinylester composites. Journal of Composite Materials, 41(14): 1729-1742.
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Polytechnic University of Timişoara (UPT)

Name & Surname: Dan-Andrei ŞERBAN

Education and training:
2014 – 2015, PostDoc in Mechanical Engineering, topic of Materials and Technologies for Energy Conversion, Polytechnic University of Timisoara, Romania, title: “Mechanical characterization and numerical modelling of composite materials used in lightweight structures”
2009 – 2012, PhD in Mechanical Engineering, Polytechnic University of Timisoara, Romania, title: “Experimental investigations and numerical simulations of the mechanical behaviour of polyamides”
2004 – 2009, Engineering Diploma (Master’s Degree equivalent) in Manufacturing Engineering, Mechanical Faculty, Polytechnic University of Timisoara, Romania.

Work experience:
2014 – Ongoing, Postdoctoral scientific researcher, Research Institute for Renewable Energy, Polytechnic University of Timisoara
November 2011 Ongoing, Assistant researcher, Polytechnic University of Timisoara
May 2014 – November 2015, Postdoctoral researcher, Polytechnic University of Timisoara
February 2015 – April 2015, Associate researcher, Technische Universität Dresden
February 2014 – July 2014, Associate researcher, Technische Universität Dresden
June 2013 – August 2013, Associate researcher, Technische Universität Dresden
February 2013 – October 2013, Assistant lecturer, Polytechnic University of Timisoara
April 2012 – August 2012, Associate researcher, Technische Universität Dresden
July 2011 – August 2011, Associate researcher, adidas AG,
March 2011 – June 2011, Associate researcher, Sports Technology Institute, Loughborough University, UK
November 2009 – December 2009, Associate researcher, Technische Universität Dresden

Participation in research projects:
2009 – 2016, “Micro-mechanical modelling of cellular materials with refinements on fracture and damage”, 172/2009, Funded by UEFISCDI
2013 – 2016, “Microstructure - Mechanical Properties Relationship for Metallic Foams”, 653/2013, funded by UEFISCDI
2012 – 2015, “Textile-reinforced composite components for function-integrating multi-material design in complex lightweight applications”, SFB 639, funded by DFG
2015. “Production technologies for light metal and fiber reinforced composite based components with integrated piezoceramic sensors and actuators”, CRC/TR 39 B6, funded by DFG

Publications (up to 5):
1. D. A. Şerban, L. Marşavina, and V. V. Silberschmidt, "Behaviour of semicrystalline Thermoplastic polymers: Experimental studies and simulations" Computational Material Science, vol. 52, pp. 139–146, 2012. (Impact factor: 1.897);

2. D. A. Şerban, L. Marşavina, and V. Silberschmidt, "Response of semicrystalline thermoplastic Polymers to dynamic loading: A finite element study" Computational Material Science, vol. 64, pp. 116–121, 2012. (Impact factor: 1.897);
3. D. A. Şerban, G. Weber, L. Marşavina, V. V. Silberschmidt, and W. Hufenbach, "Tensile properties of semicrystalline thermoplastic polymers: Effects of temperature and strain rates," Polymer Testing, no. 32, pp. 413–425, 2013. (Impact factor: 1.816);
4. D.A. Şerban, E. Linul, T. Voiconi, L. Marşavina, N. Modler, "Numerical evaluation of twodimensional micromechanical structures of anisotropic cellular materials: case study for polyurethane rigid foams", Iranian Polymer Journal, no. 24, pp. 515–529, 2015 (Impact factor: 1.806);
5. D.A. Şerban, L. Marşavina, N. Modler, "Low cycle fatigue behaviour of polyamides". Fatigue and Fracture of Engineering Materials, no. 38, pp 1383–1394, 2015 (Impact factor: 1.561).

12. Main facilities and Equipment

The consorcium has a proper significant facility and equipment that are required to fulfil the aims of the Project. In the project ther are planned only few small purchases laboratory device. The consorcium members have the software for simulations (WP3) and access for databases in the field of materials science (WP1). They have also equipment required for material research (WP 1, 2, 4 and 5) such as: computer sets, chamber for material testing (for example: environmental chamber for ageing tests and thermal test chamber), laboratory freezer with natural air circulation, universal testing machine (CUT), stereo microscope with accessories, moisture analyser, spectrometer, profilometer, X-ray, scanning Microscope with EDS, multifunctional device with accessories, equipment for DTA and other.

13. Status of Consortium Agreement

The Partnership Agreement will have to cover the various financial, technical and legal aspects related to the implementation of the project, including: partners' rights and obligations within the framework of the project and the Agreement; partners' role and responsibilities in carrying out the work programme; management and governance modalities; financial management and related rules, reporting mechanisms; conflict management mechanisms in case of problems or tasks/activities not properly implemented; communication strategy (project website, promotional material and its dissemination, dissemination and exploitation plan); sustainability strategy; any other relevant topic for the efficient implementation of the project. The Consortium Agreement is at the initial draft stage It will be signed before the project start.

14. Related proposals submitted to other funding agencies

This proposal/ this project (or a very similar one) have not been submitted to other funding agencies.

Annex

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