Marie Curie Actions – International Fellowships

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EULA-NETCERMAT (*295197*)
"EULANETWORK IN CERAMIC MATERIALS WITH ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS"

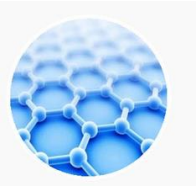
Marie Curie Actions
IRSES Final Publishable summary

Project funded by the European Commission under the 7th European Framework Programme – Activities for International Cooperation of the Capacities Programme.

VERSIONING AND CONTRIBUTION HISTORY

Version	Date	Authors
v.01	21.11.2016	J.L. Brianso, G. Pérez (UAB), Rosaura Piccoli (SENAI)

EULA-NETCERMAT (EULANETWORK IN CERAMIC MATERIALS WITH ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS) *is a project co-funded by the European Commission in its 7th Framework Programme under the Grant Agreement no* ***295197*** *running from 1st October 2012 to 30th September 2016. The information contained in this document reflects only the author's views and the Community is not liable for any use that may be made of the information contained therein.*



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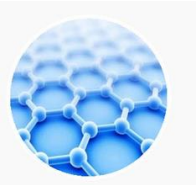


PUBLISHABLE SUMMARY

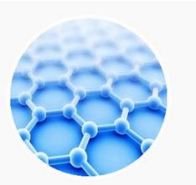
Modern Advanced Ceramics (MACs) are characterized by their high strength, texture, longevity, chemical inertness and electrical resistance. MACs market has experienced growth in both areas of the application of new and traditional. In traditional applications, the growth came from improved performance, either by a complementary role or the substitution of conventional materials, new applications, MACs assume greater role to provide certain services not possible before. Technological innovations over the years have contributed to improvements in performance and productivity, to popularize an important factor for the use of advanced ceramics in several sectors. MACs find diverse applications in modern industry such as health and medicine, environment and energy, transport and space and communication and information, promising to transform the entire industrial scene.

However there is a need for an enhancement of fundamental research in critical identified areas such as nanomaterials synthesis, nanomaterials analysis, and nanomaterials modeling to overcome major challenges and barriers recognized. Otherwise, the development of new nano-materials and nano-ceramics will still be limited by our knowledge rather than by our resources. Such barriers and challenges involve:

- Achieve a much better control of the size and shape of the primary materials to exploit their full potential
- Develop a new level of analytical capability for characterization of nano-materials, nanoceramics, and nano-devices under relevant operating conditions as well as with the highest resolution and sensitivity
- Develop a detailed microscopic understanding of how a given artificial nano-architecture and its properties are related (structure-properties relationships).

To solve some of the exposed challenges and barriers exposed on the relevance of the thematic, the main objectives proposed for the exchange programe within EULA-NETCERMAT involved:

- Enhancement of human capacity of LA partners by the exchange of know-how and experience, with the support of the EU research centers, organization of twining activities, workshops, training courses etc. This aim has been achieved through the activities performed under WP1 and WP5, especially reflected under D1.1 concerning the different training activities carried out concerning training and R&D knowledge transfer concerning advanced ceramics synthesis, and characterization.
- Supporting innovation and fostering cooperation with industry (EU and LA). Action and Business through the activities carried out under the framework of WP2 and WP3 that delivered the methods for co-creating innovation on MACs applied to environment, health and aeronautics together with the road map to speed up the process from idea generation to implementation of MACs.
- Plans for the industry, mainly the ceramic industry in Argentina, Brazil and Chile. Simultaneously, in addition to the outputs of the deliverables related to WP2 it has been possible to provide such plans through the corresponding report of socioeconomic and environmental impact of MACs in EU-LA and the Report on impact to academia, private sector, civil society and regional development together with the SWOT of the competitive position of EU-LA MACs sector. In overall, a series of documents with key information that supported the generation of the Strategic plan for future cooperation and bilateral cooperation in H2020 .
- Achieving and reinforce present and future ERA through close cooperation with LA partners as a result of the activities reflected above as well as through the development of the database of existing EU and LA networks concerning MACs useful for potential stakeholders and Preparation of new consortiums addressed to NMP or ENV calls within H2020 on MACs topics.
- Improvement the existing technical and scientific and management capacities of EULA-NETCERMAT partners. (H2020 participation of Latin American partners) through the activities carried out so far under the framework of WP1 that let to report on state of the art and needs, identifying the existing requirements and potentials as well



as the training activities carried out concerning training and R&D knowledge transfer concerning advanced ceramics synthesis, and characterization.

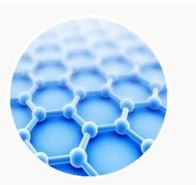
- Dissemination and diffusion of results of EULA-NETCERMAT between all relevant and identified stakeholders according with the Triple Helix (academia, industry and political authorities) through an intensive activity carried out during the overall length of the project through WP5, being possible the generation of the project presentations and progress to local HE to achieve the proposed networks, the high level students and local populations training courses (in-situ and on-line) through the virtual platform for training and short courses of all partners developed and the project presentations, including action plans, on local newspapers, local radios, local TV

In order to complete these objectives series of activities has been undertaken, generating a series of results summarized below:

- Mobilities: A total of 149.79 p/m through secondments performed so far, the greatest part of the exchanged corresponds to researchers (seniors or young), the rest to technics-administrative.
- Education and Training: by educational modules on MACs topics capable to generate economic activities with attendant socio-economic impacts on local populations. After completing the modules a platform for on-line courses at the involved LA universities that has been developed by UNLU. Education has been focused on R&D knowledge transfer concerning advanced ceramics synthesis, characterization and application, mainly Synthesis of Nanoparticles with homogeneous composition and controlled crystal size, Nanoparticle arrangement with uniform particle size, integration, and dispersion control; Fabrication of ceramics with pore structures. High order structural control from the micrometer to the nanometer order and Nanostructure design based on theoretical and experimental study of the relationships between local structures and the manifestation of object functions.
- Generation of a series of reports on state of the art and needs, identifying the existing requirements and potentials in academia and industry at both EU and LA concerning MACs that let to identify opportunities, threats, strengths and weaknesses of EU-LA cooperation to assist in further development and elaborate a business plans to meet the companies in this sector and to assist in further development and elaborate a business plans to meet the companies in this sector
- Action and Business plan: such documents derived from the EULA-NETCERMAT SWOT analysis, let to identify and prioritize which systems and processes must be sustained and provide the necessary information for maintaining the activities in order to reach future objectives (scientific-technological and also in economic terms). Combined with the generated roadmap it has been possible to provide a strategic planning tool used to predict the development needs and the steps needed to promote progress in the ceramics industry through a simplified graphical representation, all the proposed actions, in the short, medium and long term, indicating the ways to achieve the desired future. This outputs allowed EULANETERMAT partners to communicate and share effectively the strategic intentions, in order to mobilize, align and coordinate efforts of the parties involved to achieve common goals.
- Dissemination of results: through the specifically designed website (http://www.netcermat.unlu.edu.ar/)
- Establishment of a strategic plan for future cooperation and bilateral cooperation in FP7&H2020 with significant impact on ERA and EC agreements seeking new collaborative agreements in order to share risks and explore new market opportunities that will be complemented by the Latin America new nanotechnology development programs during the next years.

The successful completion of the EULA-NETCERMAT project provided three major outputs:

- Highest quality competence in research in advanced ceramics with significant influence on the socio-economic development of the region/country
- Reinforce ERA as an internationally-renown partners of LA and initiator of cooperation projects in the next H2020 with an international cooperation dimension focused on the participation of private companies and development of the close cooperation with outstanding EU and LA partners



- Synergy of the research offer with the requirements of innovation market and industry well developed cooperation Academia-Industry (LA and EU) and high number of technical applications due to the future of ceramic materials.

LIST OF KEYWORDS

Modern Advanced Ceramics; high strength; texture; longevity; chemical inertness; electrical resistance; nanomaterials synthesis; nanomaterials analysis; nanomaterials modeling; nano-ceramics; artificial nano-architecture; twining activities; fostering cooperation

WEBSITES WHERE ADDITIONAL INFORMATION MAY BE FOUND

- http://www.netcermat.unlu.edu.ar/
- https://www.openaire.eu/search/project?projectId=corda_____::62b7e39c7211dc0362604e5249fc3e05

THE LOGO

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THE BANNER

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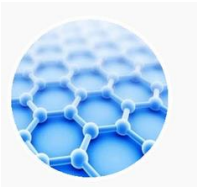
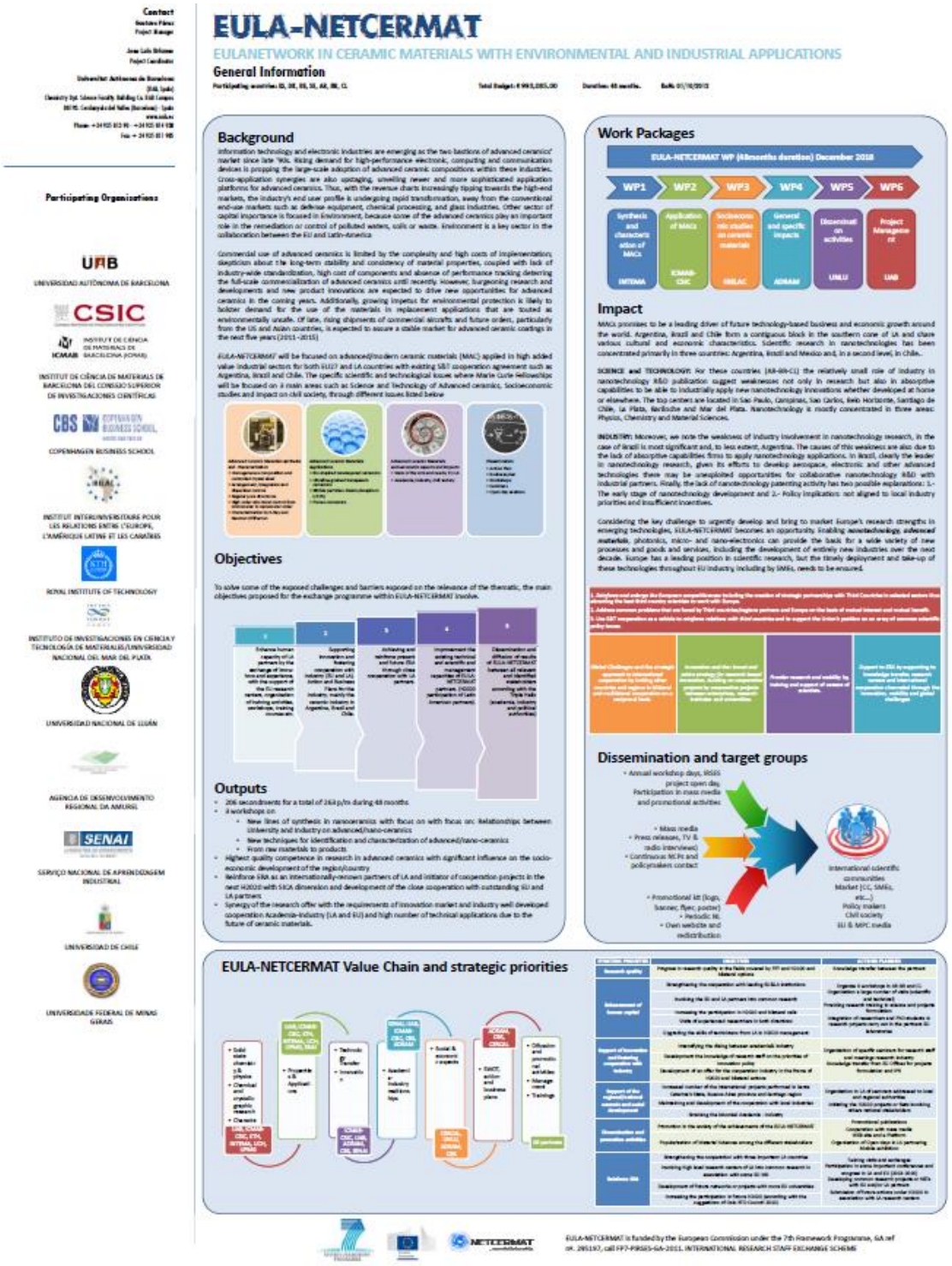
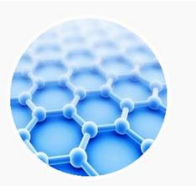


BROCHURES AND POSTER




EULA-NETCERMAT
EULANETWORK IN CERAMIC MATERIALS
WITH ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS
1
Enhance human capacity of LA partners by the exchange of know-how and experience, with the support of the EU research centers, organization of twining activities, workshops, training courses etc.
2
Supporting innovation and fostering cooperation with industry (EU and LA). Action and Business Plans for the industry, mainly the ceramic industry in Argentina, Brazil and Chile.
3
Achieving and reinforce present and future ERA through close cooperation with LA partners.
4
Improvement the existing technical and scientific and management capacities of EULA-NETCERMAT partners. (H2020 participation of Latin American partners).
5
Dissemination and diffusion of results of EULA-NETCERMAT between all relevant and identified stakeholders according with the Triple Helix (academia, industry and political authorities)
GOALS



2. REPORT ON THE WORK PERFORMED AND RESULTS

ACCOMPLISHMENT OF THE RESEARCH OBJECTIVES AS PRESENTED IN THE ORIGINAL PROPOSAL

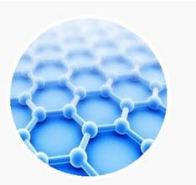
As indicated in the publishable summary the main aims have been achieved as follows

- Enhancement of human capacity of LA partners by the exchange of know-how and experience, with the support of the EU research centres, organization of twining activities, workshops, training courses etc. This aim has been achieved through a total of 149.79 p/m, being 37.45 p/m of them addressed to activities performed under WP1, especially reflected under D1.1 concerning the different training activities carried out concerning training and R&D knowledge transfer concerning advanced ceramics synthesis, and characterization and 10.08 p/m addressing the corresponding workshops and training events within WP5 (D5.4-5.6). EULANETCERMAT project considers that the consortium consortium accomplished totally this aim included in the DoW (100%)
- Supporting innovation and fostering cooperation with industry (EU and LA). Action and Business through the activities carried out under the framework of WP2 and WP3 that delivered the methods for co-creating innovation on MACs applied to environment, health and aeronautics together with the road map to speed up the process from idea generation to implementation of MACs. However, in this case, the partnership has been unable to deliver the corresponding deliverable in terms of Action and Business Plans due to the pending number of secondments to be carried out that were originally scheduled and focused on this WP and these tasks. Therefore, the project has accomplished a 75% of the originally scheduled aim.
- Achieving and reinforce present and future ERA through close cooperation with LA partners as a result of the activities reflected above as well as through the development of the database of existing EU and LA networks concerning MACs (D1.3 within WP1) useful for potential stakeholders and Preparation of new consortiums addressed to NMP or ENV calls within H2020 on MACs topics (D1.4 under WP1). In this sense, plans for the industry, mainly the ceramic industry in Argentina, Brazil and Chile have been also carried out. Simultaneously, in addition to the outputs of the deliverables related to WP2 it has been possible to provide such plans through the corresponding report of socioeconomic and environmental impact of MACs in EU-LA and the Report on impact to academia, private sector, civil society and regional development (D4.3) together with the SWOT of the competitive position of EU-LA MACs sector (D3.2). In overall, a series of documents with key information that supported the generation of the Strategic plan for future cooperation and bilateral cooperation in H2020. EULANETCERMAT project considers that the consortium accomplished totally this aim included in the DoW (100%)
- Improvement the existing technical and scientific and management capacities of EULA-NETCERMAT partners. (H2020 participation of Latin American partners) through the activities carried out so far under the framework of WP1 that let to report on state of the art and needs, identifying the existing requirements and potentials as well as the training activities carried out concerning training and R&D knowledge transfer concerning advanced ceramics synthesis, and characterization. EULANETCERMAT project considers that the consortium accomplished totally this aim included in the DoW (100%)
- Dissemination and diffusion of results of EULA-NETCERMAT between all relevant and identified stakeholders according with the Triple Helix (academia, industry and political authorities) through an intensive activity carried out during the overall length of the project through WP5 (D5-4-56), being possible the generation of the project presentations and progress to local HE to achieve the proposed networks, the high level students and local populations training courses (in-situ and on-line) through the virtual platform for training and short courses of all partners developed and the project presentations, including action plans, on local newspapers, local radios, local TV. EULANETCERMAT project considers that the consortium accomplished totally this aim included in the DoW (100%)

NEW OBJECTIVES ESTABLISHED DURING THE COURSE OF WORK AND NEW LINES OF RESEARCH

As a result of the activities carried out by the partners the performed secondments and the corresponding networking it has been possible to present 8 different proposals to different work programmes during FP7 and H2020, which are summarized under D1.4. Those being successfully granted are summarized below.

- H2020-MSCA-RISE-2014. ADVANCED MULTIFUNCTIONAL NANOSTRUCTURED MATERIALS APPLIED TO REMOVE ARSENIC IN ARGENTINIAN GROUNDWATER. GA645024. 01/01/2015.
- H2020-MSCA-RISE-2014. GEOPARKS: HERITAGE, EDUCATION AND SUSTAINABLE DEVELOPMENT - AN INNOVATIVE METHODOLOGY FOR SOUTHERN COUNTRIES. CASE STUDY IN MOROCCO (ATLAS MOUNTAINS, MARRAKECH). GA644015. 01/01/2015.



WORK PERFORMED (MENTIONING ALSO UNSUCCESSFUL APPROACHES AND UNFORESEEN DEVELOPMENTS);

WP1 SYNTHESIS AND CHARACTERIZATION OF MACs

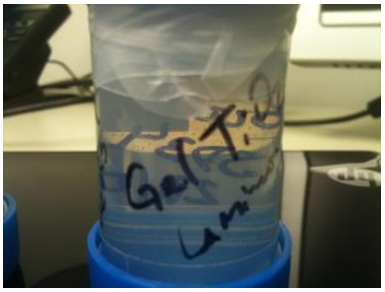
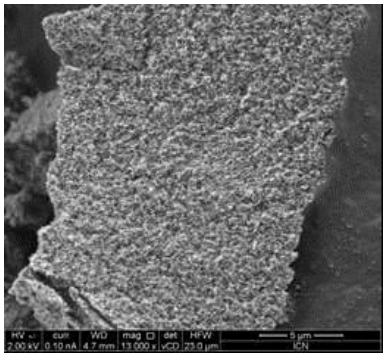
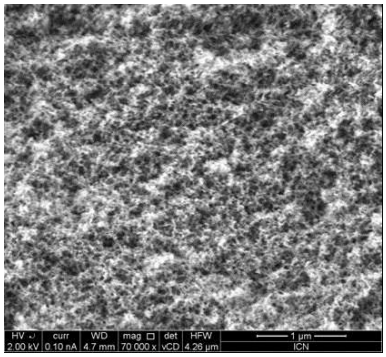
Task 1.1 Synthesis of Ceramic materials with applications in environment
Task 1.2: Characterization of MACs

The secondments carried out so far within EULANETCERMAT within WP1 contributed to identify traditional and new synthesis processes of MACs. Achieve better control of size and shape of primary materials (nano-particles) to exploit their full potential. Develop a detailed microscopic understanding of how a given artificial nano-architecture and its properties are related. Develop a new level of analytical capability for characterization of nano-materials, nano-ceramics, and nano-devices under relevant operating conditions. Identification of the most relevant existing networks in EU & LA. The involved researchers conducted a comprehensive overall study on MACs and its applications in some important sectors of industrial interest for the EU and LA countries to carry out the complementary and scheduled socio-economic study (WP3) and the diffusion of results (WP5). In this sense, within the different secondments carried out so far it has been possible the synthesis of ceramic materials with applications in environment (water and soils), synthesis of Nanoparticles with homogeneous composition and controlled crystal size, to carry out the corresponding Nanoparticle arrangement with uniform particle size, integration, and dispersion control, as well as to fabricate ceramics with pore structures. Moreover, the secondments also were addressed to develop high order structural control from micrometer to the nanometer on the synthesis and patterns of reactivity of supported metal complexes or the nanostructure design based on theoretical and experimental study of relationships between local structures and the manifestation of object functions.

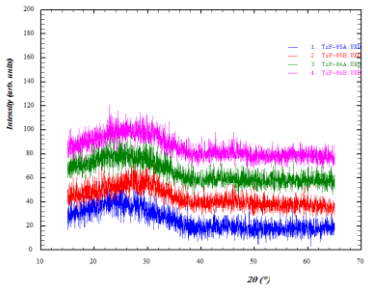
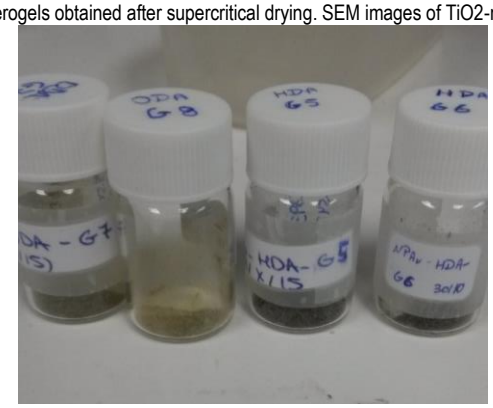
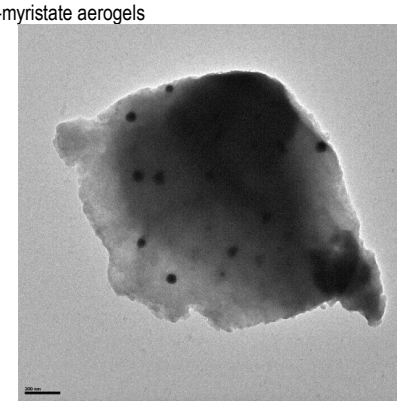
On the other hand, the secondments have been also a way to perform the corresponding training courses, capacity building and knowledge transfer, a key issue within the tasks related to the physical and chemical characterization as well as crystallographic and structural characterization of MACs through the different existing infrastructure within the facilities of the different partners such as diffraction with x-rays, electrons or neutrons, and various forms of spectroscopy and chemical analysis such as Raman spectroscopy, energy-dispersive spectroscopy (EDS), ICP-MS, ICP-OES, FP-XRF, chromatography, thermal analysis, electron microscope analysis, etc., in order to understand and define the properties of ceramic materials.

In overall, the activities carried out so far, let to 1) gain first-hand knowledge of the state-of-the-art in specific areas of MACs development, synthesis and characterization involving nanotechnologies that are of interest to both the EU and LA. This will be the basis for future joint research and establish a research agenda based on the pre-selected scientific topics of interest to be selected for future projects. 2) Identify best practice amongst the partners in the selected research fields and define strategies to transfer this know-how to other interested laboratories Promoting integration, increase research excellence and achieve critical mass, overcoming possible brain drain and lack of human potential, providing new points of view to solve problems and new ways for multi-professional projects. 3) Common use of existing research resources and access to the Large Infrastructures for research exchanges and training available in EU countries and 4) Opening of the EU consortium groups to the three most important countries of LA, giving the opportunity to an integrated EU-LA space. Further information about the total number of 17 involved secondments in this task is accessible through D1.1. 8 secondments took place during the second reporting period.In this section we present some practical results developed by SENAI SC, executed with their own financial resources, but under the scientific team EULANERCERMAT project.

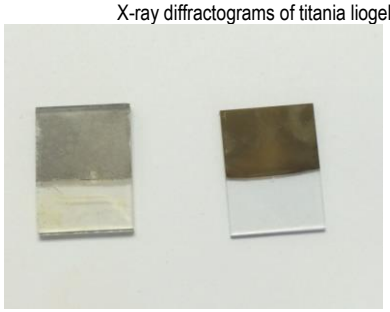
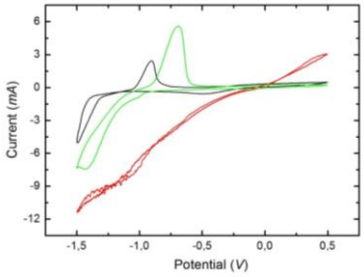
Examples of the work performed by some of the involved secondments are further detailed under D1.1, some snapshots are provided below

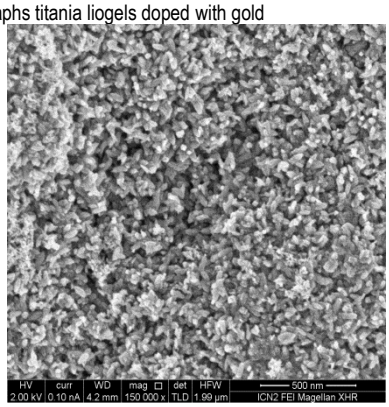




TiO2-myristate aerogels obtained after supercritical drying. SEM images of TiO2-myristate aerogels

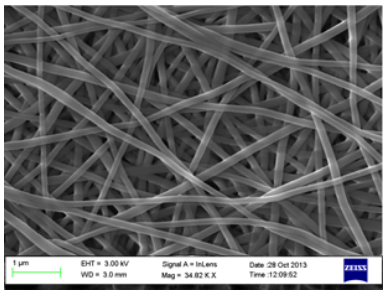




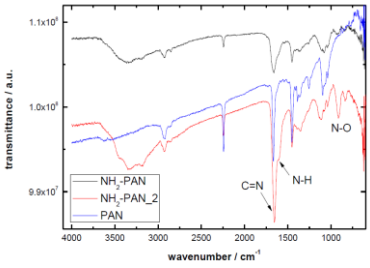
X-ray diffractograms of titania liogels. Aspect of solids a few days later after grinding. TEM micrographs titania liogels doped with gold



Macroscopic view of FeOOH-GO and FeOOH-pristine graphene. Cyclic Voltammetry of Fe+3 precursors in KCl. containing pristine graphene with pulse protocols and treated at 500ºC





Electrospun PAN nanofibers mat, characterization by SEM and FTIR spectra of nanofibers with (black and red) and without (blue) amino-functionalization

TASK 1.3: Identification of the most relevant networks of Ceramic Materials, Advanced Ceramic Materials and Nanotechnologies in EU and LA,

The mobility executed by the researchers by means of the project enabled the exchange of experience and information with other partner's researchers, and with several innovation stakeholders to generate the attached database for stakeholders working in MACs sector. As a result of such mobilities it has been possible to generate the corresponding list of the generated database with relevant institutions, networks and companies developing their activities within the Materials Sciences and Ceramics sectors through the corresponding identification carried out through the governmental bodies and corresponding chambers of commerce, available through D1.3.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Deliverable title	D1.3 Database of existing EU and LA networks concerning MACS useful for potential stakeholders
Deliverable Lead:	ICMAB-CSIC
Related Work package:	**WP 1**: Synthesis and Characterization of MACS
Related Task:	TASK 1.3: **Identification of the most relevant networks of Ceramic Materials, Advanced Ceramic Materials and Nanotechnologies in EU and LA** Subtask 1.3.2. Identification of the most relevant networks in advanced materials and annotechnologies in Argentina, Brazil and Chile
Author (s):	Carlos Miravitlles & Susana Garelic, ICMAB-CSIC Rosaura Piccoli, SENAI Silvia Martinelli, UNLU Jose Luis Brianso & Gustavo Pérez, UAB
Dissemination level:	Restricted
Due submission date:	30/09/2015
Actual submission:	07/09/2016
Project Number:	295197
Instrument:	International Research Staff Exchange Scheme
Start date of the Project:	01.10.2012
Duration:	48 months
Abstract:	The objective of the following deliverable is to provide the corresponding list of the generated database with relevan institutions, networks and companies developing their activities within the Materials Sciences and Ceramics sectors through the corresponding identification carried out through the governmental bodies and corresponding chambers of commerce.

Project funded by the European Commission under the 7th European Framework Programme – Activities for International Cooperation of the Capacities Programme.

1 [D1_3 Database of existing EU and LA networks concerning MACS useful for potential stakeholders]
Version [3]. [07/09/2016]

58 [D1_3 Database of existing EU and LA networks concerning MACS useful for potential stakeholders]
Version [3]. [07/09/2016]

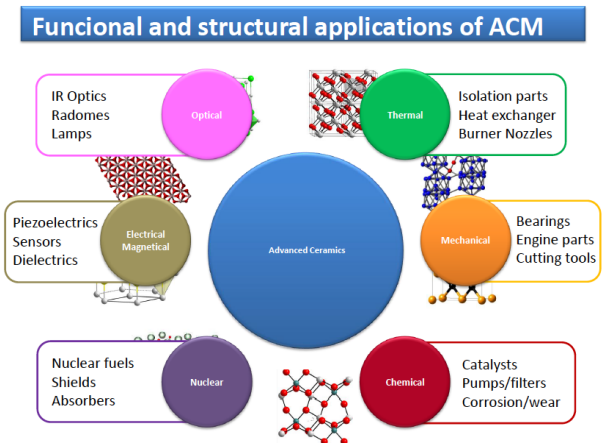
In addition, some of the performed secondments let to gather training on application preparation, project/consortium management and tips for a successful grant proposal for both basic science and applied oriented projects. Project management skills became a valuable asset to encourage secondees to write grants and reach some of the established goals within their secondments within the framework of the project. As a result, D1.4 reflects the summarized activities carried out by different members of the EULANETCERMAT partnership that during the framework of the project and as result of the networking activities it was possible to generate up to 8 new partnerships addressing different work programmes.

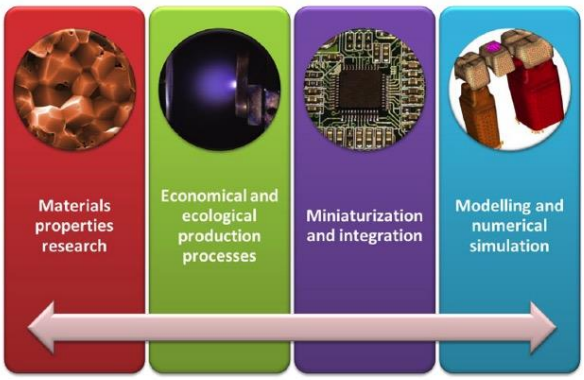
WP2 APPLICATIONS OF MACS

Task 2.1 Applications of the ceramic and nano-ceramics materials in Developed and/or Emergent Countries

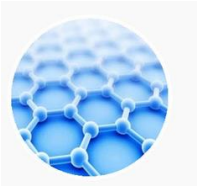
Concerning this task, it has been possible to identify environmental applications of advanced ceramic and nano-ceramics materials in Developed and/or Emergent Countries (BRAU and Chile) (INTEMA, ICMAB-CSIC, ADRAM, SENAI) based on the recompilation of indicators connected with applications such as: ceramic filters and membranes used to remove pollutants from aqueous waste streams in water treatment facilities and removal of particulate contaminants from gaseous emissions, and the manufacture of MACs using minerals that are radiologically and chemically inert, thus reducing the prospect of waste disposal problems. The purpose of identifying these applications was to facilitate the processes of idea generation and product innovation for MACs in the EU and Latin America. As an output of the deliverable, the obtained analysis can be used as a means of identifying gaps in national ceramics capabilities which could be thought of as commercial opportunities, or potentially areas requiring policy making by national governments and the procedures and methodologies can be transferred to the LA partner countries participating in the project.

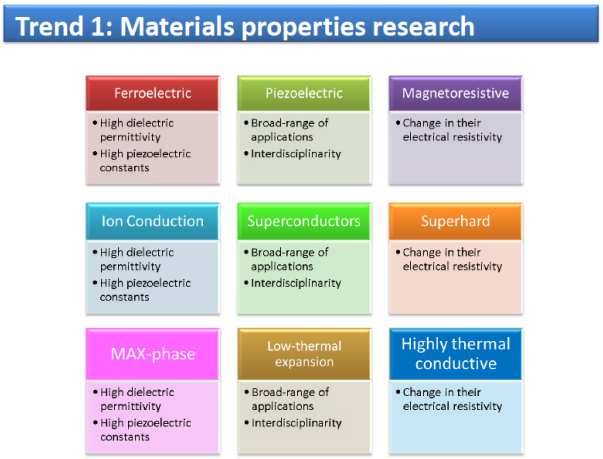
The new and emerging family of MACs utilise highly refined materials and new forming techniques. These "new" or "advanced" ceramics, when used as an engineering material, possess several properties/applications which can be viewed as superior to metal-based systems. These properties place this new group of ceramics in a most attractive position, not only in the area of performance but also cost effectiveness, which main applications based on functional and structural properties are given in the picture below:

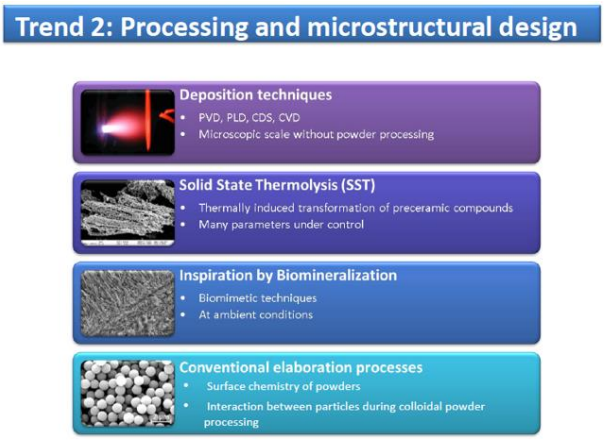


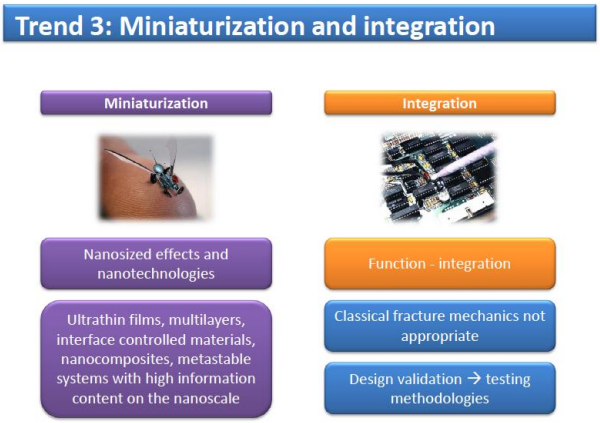


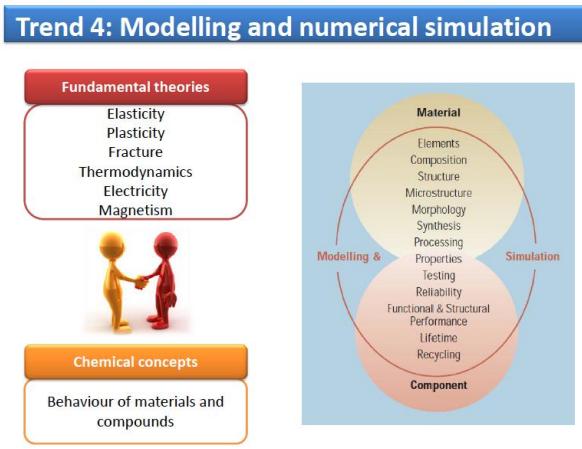
As a result of the existing gaps in the basic understanding of advanced ceramic materials behaviour, at the production and engineering step of materials and components it is required a advanced ceramic materials knowledge transfer. In this sense, four different trends in MAC technology derive from the performed bibliographic survey, summarized as follows. Within each trend, more detailed information is provided below:



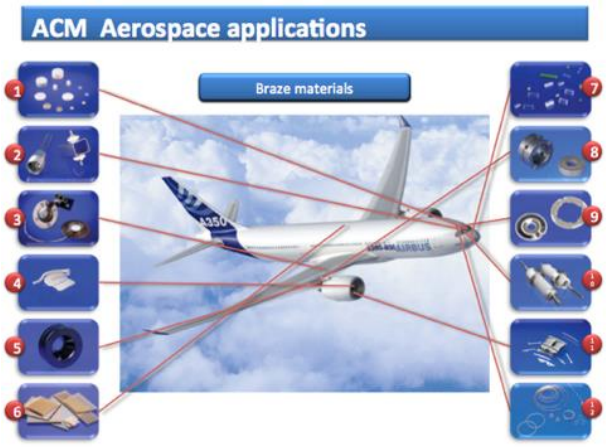


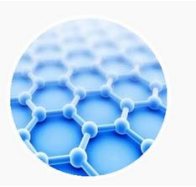






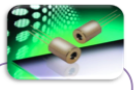
The information of the MAC's applications was structured in differentiated sectors such as Health, Aeronautics & Automotive and Environment.



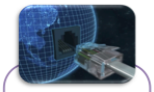


ACM Electronic applications

- Alumina
- Aluminium nitride
- Ceramic/metal
- Dielectrics
- Soft coatings
- Steatite
- Precision Glass
- Piezo ceramics
- Macor
- Glass preforms
- DLC
- Diamonschield®



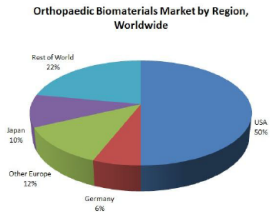
- Insulators
- High power laser diodes
- Optical coatings
- HV Capacitors
- Power supplies
- Photoconductors
- IR Detectors…

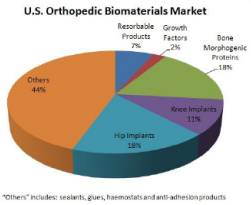


- Chip inductors
- Antennas
- GPS antennas
- Transformers
- Transmitters
- Touch screens
- Fibre optic switches
- Power storage

- Bearings
- Transformers
- Anti vibration devices
- Printers
- Profilometers
- Surface testing equipment…

ACM in Health and Medicine

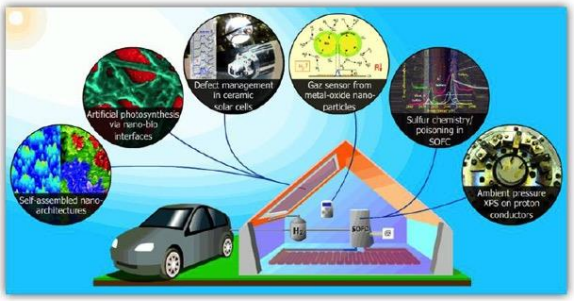




Applications

- Prostheses
- Surgical instr.
- Blood separation
- DNA testing
- Bone screws
- Heart pumps
- Medical imaging
- Blood flow
- Bone stimulators
- Cochlear implants
- Air in-line sensors
- X-Ray equipments

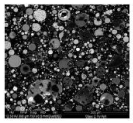
Energy applications



ACM in Environment

Objective: reduction of polltuants

- Particle filters
- SO_x and NO_x decomposition
- Refractories Flying ashes
- Hyperfiltration and nanofiltration
- Nuclear waste treatment
- Ceramic recycling
- Antibacterial tiles



Other applications…

Fibre-reinforced ceramic composites

- Ceramic Matrix Composites
- Reinforcement
- Protection against oxidation
- Reliability

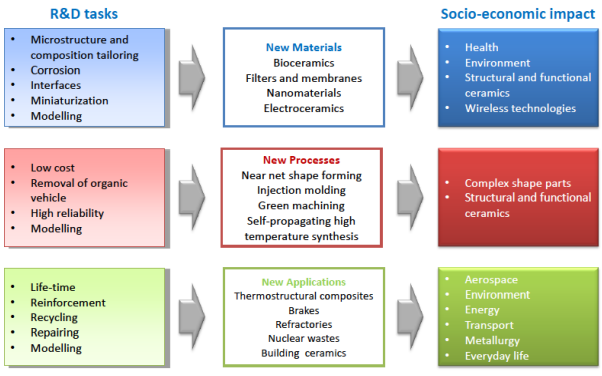
Refractories

- Microstructures modelling
- Refractory properties

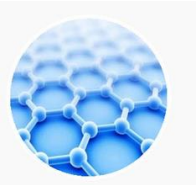
Building materials

- Concrete → water
- Fibre reinforcement
- Temperature
- Fibres, interfaces, corrosion, recycling, new concretes…

Socio-economic impact & overview of ACM



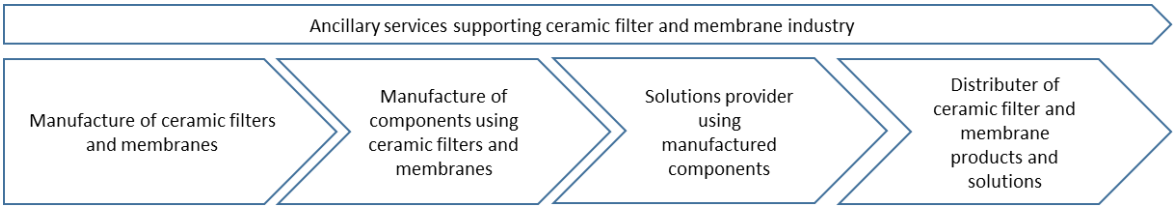
The compiled information will contribute to enhance relational growth, boost the processes of idea generation and conceptualization and shorten the road to innovative solutions which result in product innovation for practical solutions on the application of MACs to the environmental, health and aeronautics sectors. Such product innovation and further required research must be addressed for the production of advanced ceramics based on nanomaterials and nanocomposites,



carbon nanotubes, nanopowders, self-healing composites, superionic conductors, ferroelectric materials, to be employed for the treatment of nuclear waste, antibactericides, nanostructured sensors, electro-optical devices. However, basic research is also needed concerning the processing of complex shapes and near net shape forming with high reliability, as well as the phenomena occurring at the interphase. In overall, the future MACs that must be developed and the involved R&D tasks have to be defined, bearing in mind the related socio-economic impact.

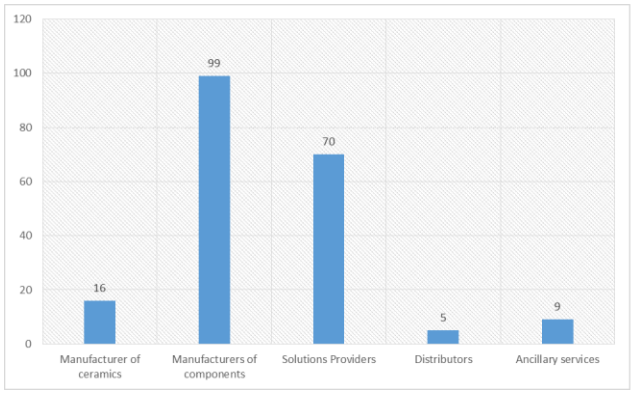
TASK 2.2: Develop and qualify methods and techniques in co-creating innovation

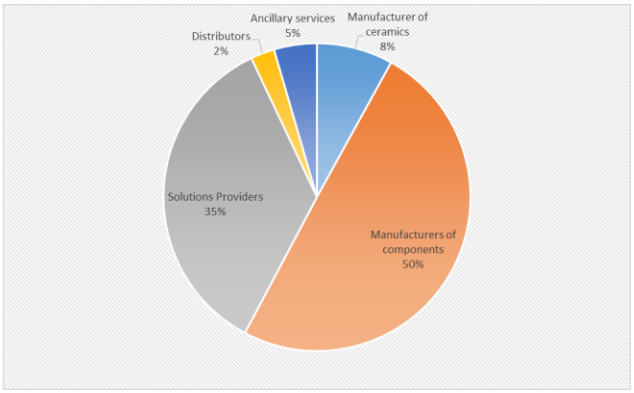
The activities carried out so far by the partnership let to summarize an analysis of the environmental applications of advanced ceramics within the EU/EEA. As such D2.1 delivers the processes of idea generation and conceptualization to facilitate innovative solutions which result in product innovation for practical solutions on the application of MACs to the environmental, health and aeronautics sectors. In this way, the partnership identified environmental applications of advanced ceramic and nano-ceramics materials in Developed and/or Emergent Countries (BRAU and Chile) (INTEMA, ICMAB-CSIC, ADRAM, SENAI) based on the recompilation of indicators connected with applications such as: ceramic filters and membranes used to remove pollutants from aqueous waste streams in water treatment facilities and removal of particulate contaminants from gaseous emissions, and the manufacture of MACs using minerals that are radiologically and chemically inert, thus reducing the prospect of waste disposal problems. The performed research presented a snapshot of commercial applications of ceramics in the environmental sector in Europe. To do this an online audit of the environmental industry was conducted in order to identify commercial organizations by geography and their business activities. The activities of each organization, that was identified in the audit, was mapped against a basic value chain (Porter 1985) in order to facilitate their relative positioning against other activities in the European market for environmental ceramics. Once data was extracted from relevant databases, imported into spreadsheets and verified against original sources it was analyzed. The first stage of data manipulation involved collating all the data into one sheet, normalizing it so that data fields are consistent across the collection, and so that duplicate data is removed. At this stage the data contained a list of records for each company, including the company name, the country in which the company HQ is domiciled, the data source, the corresponding corporate website, a brief company profile, keywords concerning ceramics activities, the position of the company's activities in a ceramics value chain, and finally the area of environmental ceramics applications in which the company is active. On this basis companies can be clustered according to nationality, position in the value chain, and areas of environmental focus. Based on these lists very simple statistics were formulated enabling comparisons and basic analyses.



Outline value chain describing the industry for environmental applications of ceramics.

In this way the research has identified and audited 199 organizations that are active in the area across the EU/EEA, it has provided a directory and description of these 199 organizations and has derived an environmental ceramics value chain, into which their activities were classified. The research has also shown how the nature of these activities varies across Europe, and how some European nations are more active in this industry than others.

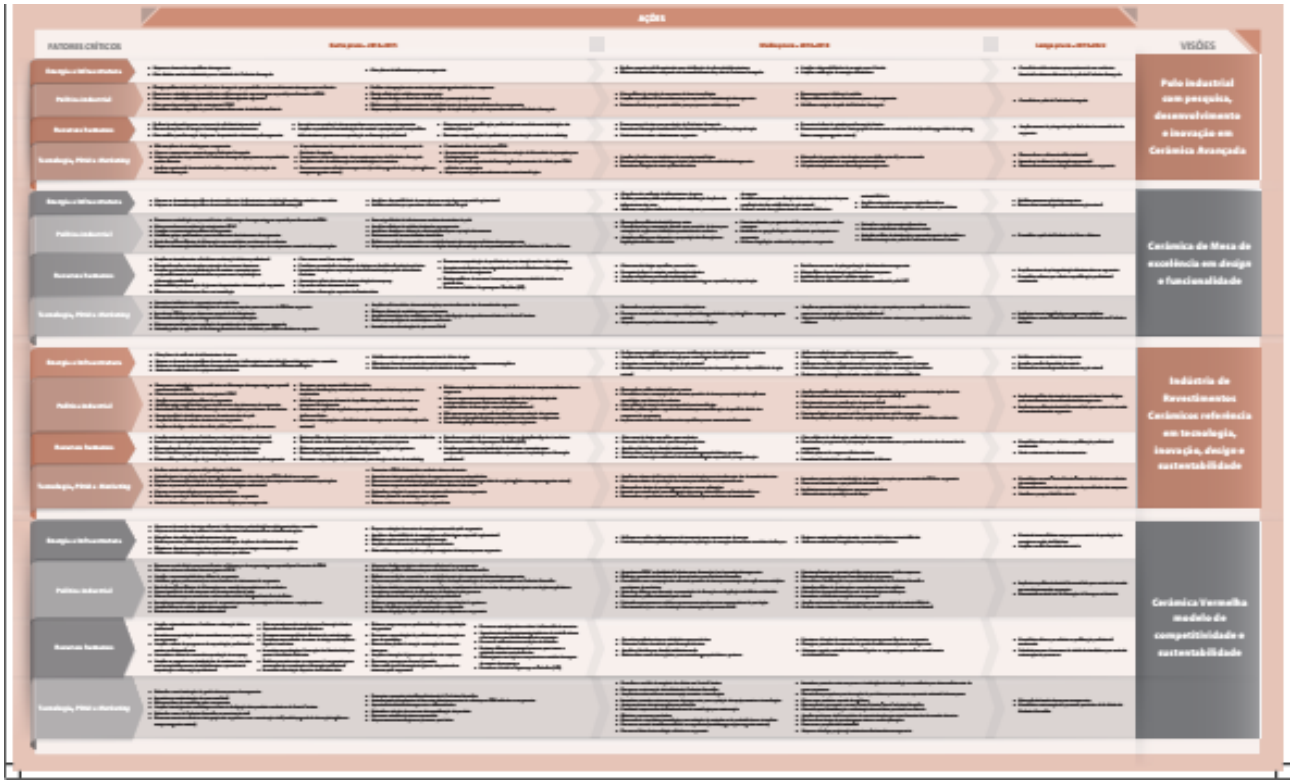


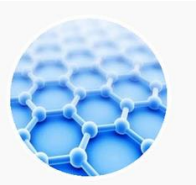


Distribution of EU/EAA companies across the environmental ceramics value chain.

Task 2.3 Road map from idea generation and conceptualization to development

The actions carried out so far by the involved partners let to generate the corresponding deliverable D2.2 that provides a strategic planning tool used to predict the development needs and the steps needed to promote progress in the ceramics industry through a simplified graphical representation of collective construction held at the Expert Panels. In this road map, are displayed for viewing and critical, all the proposed actions, in the short, medium and long term, indicating the ways to achieve the desired future. This tool allows users to communicate and share effectively the strategic intentions, in order to mobilize, align and coordinate efforts of the parties involved to achieve common goals.





WP3 SOCIOECONOMIC STUDIES ON CERAMIC MATERIALS

Task 3.1 Evaluation of the impact of advanced ceramic materials expressed in research publications and economic terms.

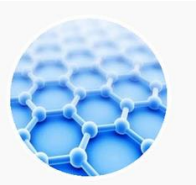
The mobility executed by the researchers by means of the project enabled the exchange of experience with other partner's researchers, and with several innovation stakeholders. It was possible to learn about the governance of science and technology of entities of both private and public law, innovation policies, development programs for industry and to understand how the company/university process occurs. It was also possible to identify new opportunities of projects for future cooperation. The outputs derived from D3.1, with Polycentric Governance as a three-dimensional model for production relations, exchange relations and consumption relations in nano-ceramics as a Commons, let to conclude that the societal impact of new technologies in MACs uncovers the following facts:

- The economic impact shows that new technologies are really accepted on the market, as they provide hope in the solution of societal challenges.
- The direct and indirect impacts on the market are an ever increasing share of nano related products in the offer side and the increased need of optimizing the safety issues and concerns of the public.
- On the production the challenge is of reducing barrier to market and the fragmentation of value chains.
- The social impact of introducing MACs in new markets is huge, as t not only implies the economic growth of new markets, but also the technology push factor in the creation of new enterprises that create new jobs.
- Traditional ceramic producers are confronted to a paradigm shift towards cleaner production and customized gadgets to their classic products.
- SME's have become the battle horse of this industrial evolution of those new technologies
- The impact on environment and the measure of the ecological footprint of the producers and the users of those new technologies remains yet unknown and more cooperation efforts in this field is needed between LAC and EU.
- Paradoxically, the effects in the area of public health via nanomedicine technology have already produced large added value in the therapies of mossy pathologies.
- This step-on-stones methodology will be used in our handling nano-ceramic materials as a potential commons in Denmark. Of course, the stones are not placed in a straight line. Neither are the framework and theories used above straight forward to be applicable. We take them to inspirational material for the last part of our effort to contribute to EULANETCERMAT, as it can be applied in LAC as well.

Task 3.2 SWOT analysis and employment in the advanced ceramic sector

The mobility executed by the researchers by means of the project enabled the exchange of experience with other partner's researchers, and with several innovation stakeholders. The learning and gathering of information was facilitated by the good planning and time management, optimizing the activities so that they could generate greater benefit for the project. It was possible to learn about the characteristics of each country, and specifically about both private and public law, innovation policies, development programs for industry and to understand how the company/university process occurs. It was also possible to identify the corresponding strengths, opportunities, weaknesses and threats that will help on defining the corresponding action plan and new opportunities of projects for future cooperation.

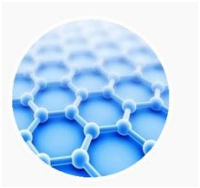
In order to implement a strategic analysis of the actual situation, a qualitative and quantitative evaluation providing SWOT analysis has been carried out by EULANETCERMAT in order to identify concrete opportunities as well as potential bottlenecks related to cooperation and knowledge transfer between public research and industry within the MACs industry and academia. Such analyses have taken into account the cultural and human aspects, the administrative, regulatory and financial framework, operational considerations and governance. The key is interaction, thus, networking, clustering and building a Knowledge Value Chain, which is accessible to all stakeholders and consumers, will contribute to build up a



reliable database, which can be accessed by anyone involved to strengthen partnerships between both regions. Furthermore, the performed evaluation will contribute to ensure complementarities between local promotion services (technical support, training programmes, etc.) and regional operations within the MACs sector through the strategic analysis of the ecosystem and the stakeholders involved in the promotion of innovation related to MACs sector in the LA region. The outputs of such task are gathered within D3.2. Final SWOTs are provided below.

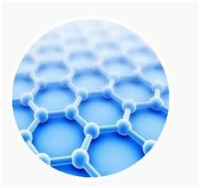
EULANETCERMAT EU PRIVATE AND ACADEMIA SECTOR SWOT ANALYSIS

STRENGTHS	WEAKNESSES
The EU is a world leader in producing value added ceramics products – manufactured by flexible and innovative SMEs. High quality of several research centers and universities High level of sophisticated scientific instruments and synchrotron facilities PhD and Master programs in many EU universities Existence of ERASMUS and other mobility programs (PEOPLE) EU H2020 In many cases good collaboration between Academia and SMEs High-quality producers. The EU remains a major player in the high value, high-quality end of the markets. ƒ Design and branding. In some subsectors, EU firms brand and sell high value unique designs; in some cases exploit country of origin marking. Fast response. SMEs can respond quickly to changing market demand and new opportunities New technology in production process. The use of automation technology and environmental technologies are widespread in ceramics manufacturing. Knowledge clusters. The clustering of SMEs in the sector fuels product and process innovations and increases competitiveness.	Low production flexibility. The demand in the refractory sub-sector and in the brick and floor tile sub-sector is subject to changes in demand and there is only little flexibility in the utilisation of capacity. IPR – Protection of property rights and instigating legal proceedings against cheap "copies" is difficult and expensive for SMEs in some sub-sectors. Image. Low ability to attract skilled employees. Attracting technically competent employees is a problem. Mature production process. The ceramics production process is at a mature stage and close to its limits, whereas the ability to improve efficiency and reduce CO_2 emission further in the short term is limited. High entry barriers for new companies due to high set-up costs, economies of scale and tied distribution channels may hinder innovation High sunk-costs due to capital-intensive production facilities may hinder a shift in production from low-price to high-price products. Weight of the product. The high weight of some sub-sector products increases products cost and reduces access to customers. Difficult to install. Floor and wall tiles are more difficult to install than substitutes such as carpet or paint.
OPPORTUNITIES	**THREATS**
Mergers and acquisitions. The firms in the ceramics sector can merge to achieve economies of scale. Specialization in the sector of advanced ceramics in many countries Strong ceramic industry in some countries like Italy or Spain Specialization in selling high value-added ceramics suits the capabilities of many SMEs. Access to new markets, with cultural relationships: Latin America (Argentina, Brazil, Mexico…) Existence of national programs for S&T cooperation (France, Germany, Italy, Spain…) New markets are emerging in growing economies and firms must position themselves to exploit opportunities .As Latin America countries or Asian countries Brand and loyalty. Being closer to the customers (geographical location nearer customers – for instance retailers) Getting closer to customers. Getting closer to customers by using the Internet. Improvement of services. Just-in-time and time-to-market are important especially in the b2b markets. Developing cleaner technology. Strong EU regulations in environment (EU Directives): Green Economy There might be a scope for developing cleaner technologies in the ceramics sector. Increased RTD activities.due to EU programs like H2020 Technical tiles and ceramics; smart materials, use of lasers in decoration, nanotechnology, automation of processes. Labelling and communicating advantages. Certifications, origin marking, and eco-labelling are opportunities for communicating advantages	Low-cost competition. High salaries in the EU, especially for high qualify workers Sharp rise in the import volume of low-cost ceramics from emerging economies – particularly in ceramic tableware. Volatile demand. Dependency on demands in other markets such as construction and for steel. Emergence of China. China is a serious competitor to the EU on the world ceramics markets – especially in terms of delivering low cost products. Increasing prices on energy. Raw materials. Reliance on import of virgin raw materials from non-EU countries – especially for technical ceramics and the refractory sub-sector. Environmental and Health and Safety regulation. High levels of EU environmental regulation and emission control create a competitiveness challenge to non-EU countries where environmental legislation is less strict but primarily increases cost of European based production facilities. IPR. Intellectual property rights are infringed for fine ceramics sub-sectors. Substitution. In the long term, substitute materials and the relatively high dependency on the construction and renovation sectors may challenge the competitive position. Trade barriers. The EU faces high import duties into many export markets, e.g. the US compared to China and Mexico. Non-tariff barriers are also increasingly important. Dwindling workforce. A dwindling workforce can be a threat to the sector if not enough people can be recruited.

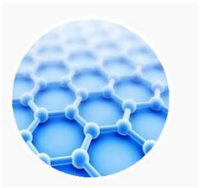


EULANETCERMAT SWOT ANALYSIS BY COUNTRIES

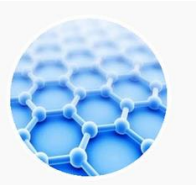
STRENGTHS		
ARGENTINA	**BRAZIL**	**CHILE**
Existence of competitive groups in the INTI (National Institute of Industrial Technology), INTEMA (Instituto Nacional en Ciencia de los Materiales) etc. and in some Universities like; Buenos Aires, Córdoba, Mar del Plata or Rosario (Research Institute of Materials Science and Technology) and CTMyC Technology: Mineral resources and Ceramics Existence of CONICET as ceramic funding projects mainly in the public sector with specific support to the private sector Existence of graduate studies in materials science at various universities such as the Mar del Plata Success Stories transfer of knowledge to the productive sector in various areas of materials science, especially in bio-materials, ceramic, polymer engineering, eco-materials, metallurgy and mechanics of materials Argentina has some level institutions worldwide, as is the center Carlos Balseiro in Bariloche Incorporating art equipment has enabled the development and transfer of knowledge in nanotechnology and nano-materials with high technological impact Innovation: Numerous completed or ongoing developments correspond directly to immediate needs or apply technological processes of synthesis or manufacturing. Several lines of work are linked contractually with industrial activities in the fields of power generation, chemical and petrochemical, metallurgy, etc, and in fields related to the synthesis and processing of metallic ceramic materials, polymers and Collaborative projects between Argentina and the EU through the FP and H2020 There is some bi-national and / or international laboratories, mainly in France and Germany The EU-Argentina agreement in S&T	Existence of high quality university groups, including the federal universities of Sao Paulo, Minas Gerais (Belo Horizonte), Rio do Janeiro, Sao Carlos, Campinas, Parana, Santa Catarina and Rio Grande do Sul Existence of technical escolas as SENAI (Senai) and Federal Institutes of Education (IFE) in all Brazilian states for the formation of MAO specialized technical work Existence of FINEP, CAPES as ceramic funding projects mainly in the public sector with specific support to the private sector and postgraduates mobilities FINEP's mission is to promote economic and social development by supporting the public sector in Science, Technology and Innovation in companies or technology centers LNLS: The Brazilian Synchrotron Light Laboratory (LNLS) is funded by the Brazilian Ministry of Science and Technology (MCT). It provides access to Researchers from any country, and Especially from all of South America. The Brazilian Synchrotron Light Source (LNLS) in Campinas, São Paulo, has three beamlines dedicated to x-ray diffraction: XRD1, XRD2 and XPD. X-ray diffraction techniques are especially useful to get structural information from crystalline materials, as ceramics materials. Existence of a powerful ceramic industry, mainly in the southern states of Brazil: Santa Catarina, Parana and Rio Grande do Sul, and the region em São Paulo and Minas Gerais open to innovation and new ceramic materials The great existence of raw resources The EU-Brazil agreement in S&T	Existence of high quality university groups , particularly in Santiago (University of Chile) , Concepción and Antofagasta Catholic University Existence of ceramic Conicyt as funding projects mainly in the public sector with specific support to the private sector Three years of existence from a line called FONDEF applied research , involving 30% of private funding ago, directed towards priority sectors and lines Existence of Materials degrees in engineering at the universities of Chile and Concepción Funding of basic science supported by FONDECYT Collaborative projects between Chile and the EU through the FP4-7 and H2020 The EU-Chili agreement in S&T



WEAKNESSES		
ARGENTINA	**BRAZIL**	**CHILE**
Poor cooperation between the academic and business sectors Shortly level of technology and innovation in the sector Little collaboration between specialized Argentine groups in this sector Little transfer between the public and private sector Few public resources in R & D of high-tech ceramic industry Low productivity of scientific articles and innovative high-tech Lack of strong industrial clusters in the ceramic sector Preponderance of the scientific world of physics (properties) on the chemical (synthesis of new materials	The ceramic sector in Brazil , in a general way , has a great deficiency in providing statistical data and indicators of performance , which are vital for the sector's development tools and increase their competitiveness Lower industrial productivity The country has always lacked a culture of investment in RTD , occupying the position 23 in the raking of patents with 0.3 % of the total Low level of industrialization of industrial parks Lack of EcoParks The lack of incentive for RTD; Economic policy of Brazil is not stable at the present moment	Litle collaboration between the university and business sector; Shortly level of technology and innovation in the sector; Chilean little collaboration between groups specialized in this sector; Little transfer between the public and private sector; Few public resources in R & D of high-tech ceramic industry Low productivity in this sector of scientific articles and innovative high-tech Lack of strong industrial clusters in the ceramic sector Preponderance of the physical world (properties) over the chemical sector (synthesis of new materials)
OPPORTUNITIES		
ARGENTINA	**BRAZIL**	**CHILE**
Abundant raw materials (Clays of high quality) Strong potential to increase scientific and technological production in certain colleges and CONICET Improved collaboration between Argentina and UE28 , within H2020 Belonging Argentina to MERCOSUR can open up new possibilities in the sector, provided that innovation is introduced in the ceramic materials at competitive prices The next free trade agreement between the EU and Mercosur could provide the impetus for exports of ceramic materials	The ceramic sector in Brazil is large and heterogeneous and divided into various sub-sectors, among which stand out for their innovative and value-added components include: ceramic tiles, refractories, heat insulation and high-tech ceramics, among the latter class ceramics include magnetic, thermal, implants in humans, biomaterials, etc. On the one hand the existence of large scientific infrastructure, high-level university groups, powerful drivers of research organizations and university-industry cooperation makes that Brazil can have a realistic chance of advancing knowledge of ceramic materials Having a S & T agreement with the EU is another favorable factor Brazil real possibilities of exporting ceramics is formed if the free trade agreement between the EU and MERCOSUR open The program Science without Borders Brazil's government finances exchanges between teachers and researchers as well as master's and doctoral students and postdoctoral programs	Abundant raw materials Economic stability Strong potential to increase scientific and technological production in certain universities and in the Conicyt Improved collaboration between Chile and the UE28 , within H2020 Fellowship Program to fund PhD Chile Chilean youth and stays longer than three months Postdoctoral Programs and Ministry of Education Strong collaboration with Spain and France, which could increase



THREATS		
ARGENTINA	**BRAZIL**	**CHILE**
Strong competition from other countries within the region, mainly with Brazil and Mexico and to a lesser extent outside the USA, the EU and China region, among others Small dimensions of non-traditional ceramic companies Slowing economic growth in Argentina, including the ceramic sector between 2013 and 2015 because of decreases in agricultural products and the increase of the dollar against the peso and stagnant exports Inserting personnel trained in the academic sector in the production and business sector Promote interaction of groups (clusters) ceramic with other groups of applied research and high value-added sectors The public, private and institutional roles are crucial to generate mechanisms and tools that facilitate the full inclusion of Argentina in these new technologies. The consolidation of research institutions in the field of nanotechnology and its largest association in collaborative networks are key factors to promote the processes of knowledge transfer from basic research to industrial application	The fall in economic growth in Brazil in the last two years and poor growth outlook for 2016 is a negative factor for the system of S & T Brazilian Strong competition from China is another negative factor for the immediate future With the rise of the dollar , imports will lose strength and internal produtctos be more expensive	Competition from other countries within the region , mainly Brazil and Argentina and to a lesser extent outside the USA , the EU and China region , among others Small dimensions of the ceramic companies Slowing economic growth in Chili , including the ceramic industry in 2014 and 2015 because of the falling price of copper Inserting personnel trained in the academic sector in the production and business sector Interaction of groups (clusters) ceramic with other groups of applied research and high value-added sectors



Sub-task 3.2.1: Mapping of employments in LA (AR, BR and CL) and EU

The corresponding mapping of employments has been done at the different LA countries related to MACs to reveal relationships with other related domains of interest such us environment, health and aeronautics and their integration. Such sub task has been performed by the appropriate software. Subsequently analysis of job distribution between SMEs and Large Enterprises was performed. The analyses focused specifically on the regions, which already have competences in ceramic technologies. The differences in terms of flexibility,qualitative and quantitative resources between SMEs and Large Enterprises has been stressed out. Such information was employed to perform a study on their capacities to cope with a new technology and the fact of already dealing with the traditional ceramic production.

Empresa	US$ Valor FOB	% sobre el total de las importaciones
RHI Chile, S.A.	24.335.812,32	12,73
Cerámicas Cordillera S.A.	21.189.922,28	11,08
Construmart, S.A.	19.561.452,51	10,23
Easy, S.A.	17.234.673,62	9,01
Codelco Chile	15.632.546,88	8,18
Comercial Duomo Ltda.	8.820.463,48	4,61
Sodimac, S.A.	8.569.400,83	4,48
Dap Ducasse Diseño Ltda.	7.292.981,35	3,81
Imperial, S.A.	6.382.384,77	3,34
Importadora BS, S.A.	4.495.121,46	2,35
Fábrica de pavimentos Budnik, S.A.	3.850.309,58	2,01
Comercial Habitar Ltda.	3.674.279,58	1,92
	141.039.348,66	**73,77**

Figura 3.1.: Principales empresas importadoras, según volumen de importación.
Fuente: Elaboración propia a partir de los datos extraídos de Legal Publishing. Los datos corresponden a las importaciones para el periodo 2012-2014, para las partidas arancelarias descritas anteriormente.

	Easy		Sodimac	
	Precios/m²		Precios/m²	
Cerámica	Bajo	Alto	Bajo	Alto
$	3.490	6.989	3.020	89.940
US$	5,68	11,38	4,91	146,82
Porcelanato	Bajo	Alto	Bajo	Alto
$	6.490	9.990	5.990	26.990
US$	10,57	16,27	9,75	43,95

Figura 5.2.: Precios medios de los productos cerámicos de las principales tiendas especializadas.
Fuente: Elaboración propia a partir de los precios ofrecidos por Easy y Sodimac. Los precios en dólares están calculados en base a un tipo de cambio de 614 pesos por US$.

In addition, the activities carried out so far within Task 3.2 also let to identify the appropriate channels for knowledge transfer from academia to industry, which could be summarized as follows:

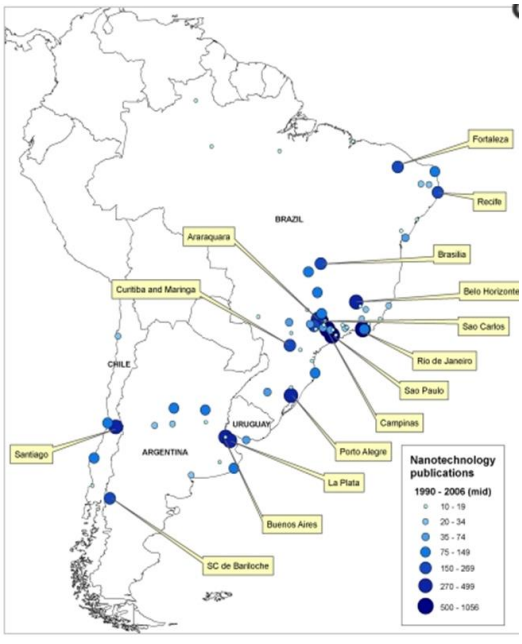
- Informal interaction or contacts
- Formation of social relationships and networks.
- Participation in conferences, workshops, congress etc.
- Active participation in conferences by presentation of research results.
- Mobility of people It embodies the employment of graduates (B.Sc., M.Sc. or Ph.D. Level) in the business sector, the employment of university staff/researchers in the business sector, the trainees, the double appointments and the temporary movement of university members to the business sector.
- Cooperation in education It either covers the training of business employees by academics, either the situation where the firm members influence curriculum of university programs or give lectures at universities.
- Cooperation in R&D Inter-organizational arrangements for pursuing collaborative R&D. It also includes the joint supervision of PhDs and Master Theses by universities and firm members and/or the financing of Ph.D. research by the business sector. R&D services
- Activities commissioned by industrial clients. It includes contracted R&D and consultancy.
- Publications Use of codified knowledge within industry. It includes joint-publications with the business sector and scientific publications of the academic researcher.
- Sharing of facilities It covers the sharing of facilities between academics and firm members or the financing of new facilities with industry funding.
- IP rights and licensing
- Transfer of university-generated IP (such as scientific research results, patents, software, trademarks, databases) to firms, e.g. via licensing.
- Academic spin-off companies
- Development and commercial exploitation of technologies pursued by academic inventors through a company

WP4 GENERAL AND SPECIFIC IMPACTS

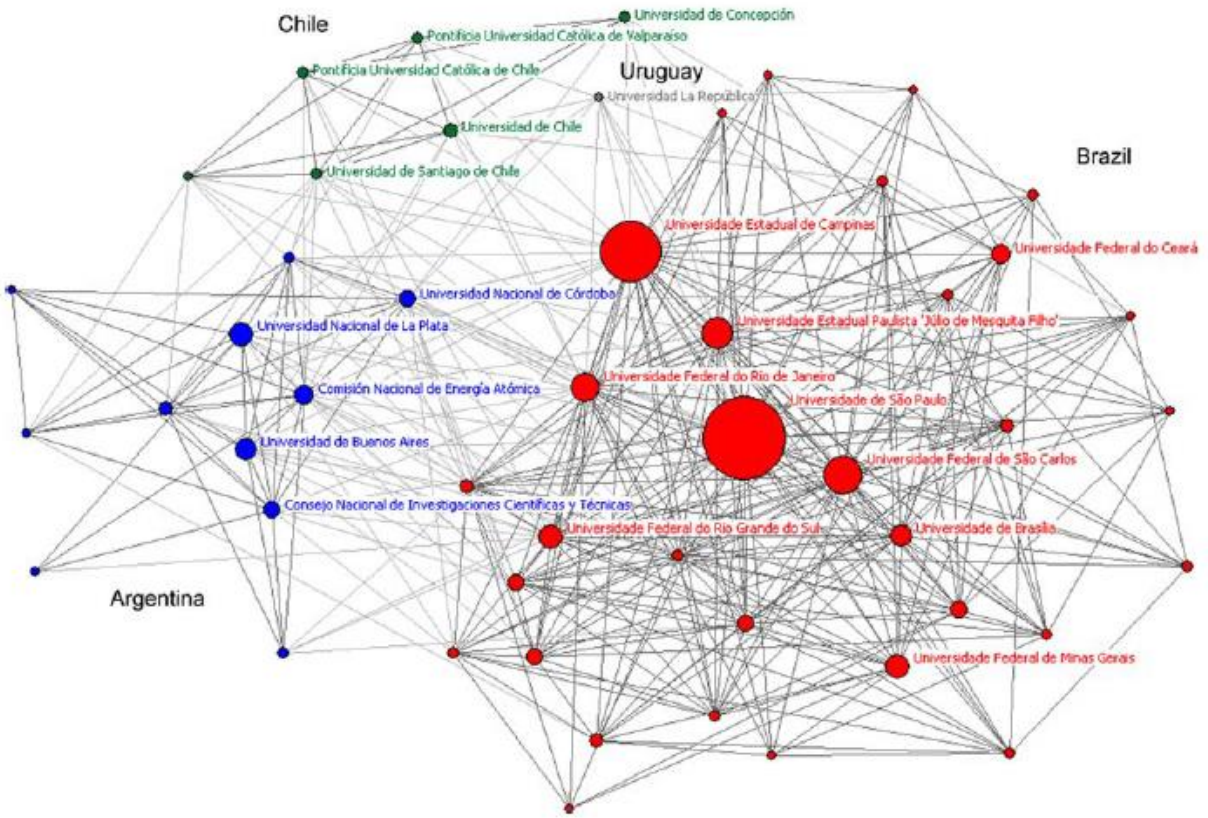
TASK 4.1: Impacts to ERA
TASK 4.2: To FP7 and H2020 cooperation and bilateral cooperation
TASK 4.3: Impacts for the EC Agreements in Science and Technology
TASK 4.4: Impacts to the Academia
TASK 4.5: Impacts to the private sector
TASK 4.6: Impacts to the civil society

Concerning the evaluation and definition of impacts to the ERA, the academia, civil society and the private sector derived from the ceramic sector needs of high level scientific research together with the existing review of strategic road maps implementations and technologies development, partners, through the developed secondments it has been possible to identify opportunities for cooperation and organize business meetings between companies and academia to promote business. The potential of nano- and/or materials technologies to address major societal challenges, e.g. in health, energy and environment is widely recognised and several leading industrial nations are actively pursuing significant R&D&I programmes for accelerating the deployment of nano- and/or materials technologies in societally beneficial applications. An action plan for Europe 2005-2009 emphasised the importance of international cooperation with less industrially advanced nations in order to secure their access to knowledge and avoid any 'nano divide'. Within this, ceramics play a key role due to their versatility and potential to provide solutions to socio-economic issues. The goal of this work package is to support sustainable development in LAC countries through the deployment of societally beneficial nano- and/or materials technologies. The methods and solutions analysed and tailored aim to meet the specific needs and circumstances using local knowledge and innovative ability.

Progress in a wide range of structural, functional and bio - medical applications of nanoceramics and ceramic based nanocomposites crucially depend on the development of new fabrication and processing technologies, along with a fundamental understanding of the relationship between their micro(-nano)structure and final properties, having a special focus on nanoceramics related to global challenges in the fields of energy and environment, connected with energy production, storage, batteries, photovoltaics, fuel cells, solar cells, supercapacitors, thermoelectrics etc. In general, it can be said that the very large investments that were made more than a decade ago into nanotechnology start to pay off dividends. Products are appearing on the market and can have a substantial impact there. Other commercial applications are on the horizon. Because of the wide scope of the technology, there are still plenty of opportunities for research and development.



At the society level it has been possible to evaluate the impact of nanotechnology applied to modern advanced ceramic considering nanotechnology as a two edge sword, as a strategic geopolitical challenge. In addition, it has been possible to evaluate the impact to the academia and the private sector from a safety for consumer worker and citizen point of view, gathering an overview of nanotechnology safety issues at US, EU and LA. The impact for the EC agreements in Science and Technology, for the ERA as well for future cooperation and bilateral cooperation was assessed through the evaluation of the interregional and regional cooperation evaluation carried out through D4.3. The mobility executed by the researchers by means of the project enabled the exchange of experience with other partner's researchers, and with several innovation stakeholders. It was possible to learn about the governance of science and technology of entities of both private and public law, innovation policies, development programs for industry and to understand how the company/university process occurs at both Europe and Latin America. It was also possible to define the strategic plan for future cooperation and bilateral cooperation through the identified opportunities of projects for future cooperation.



Geographical distribution of nanotechnology researches

In overall, the strategic plan established by the consortium was based on European industrial players and research organizations seeking new collaborative agreements in order to share risks and explore new market opportunities that will be complemented by the Latin America new nanotechnology development programs started during the last ten years. In this sense the socioeconomic impact and the state of play has been reviewed in Argentina, Brazil, Chile, Spain, Belgium and Denmark. The corresponding outputs are accessible through (D4.1) and (D4,3), where it was also included the corresponding strategic plan proposal for future cooperation and bilateral cooperation for H2020 with significant impact on ERA and EC agreements. As a result of these activities, partners consider that future joint proposals must be addressed to societal impact of new technologies in MACs which should uncover the following facts.

- New technologies really accepted on the market, as they provide hope in the solution of societal challenges.
- New technologies with direct and indirect impacts on the market to increase the share of nano related products in the offer side and the increased need of optimizing the safety issues and concerns of the public.
- To reduce the barrier to market and the fragmentation of value chains.
- Introducing MACs in new markets for the economic growth of new markets, but also the technology push factor in the creation of new enterprises that create new jobs.
- To promote cleaner production and customized gadgets to their classic products within the traditional ceramic producers.
- To reduce the impact on environment and measure of the ecological footprint of the producers and the users of those new technologies, especially from the cooperation effort point of view in between LAC and EU.
- To evaluate the effects in the area of public health via nanomedicine technology and produce large added value in the therapies of mossy pathologies.

- Promotion of mutual opening and coordination of existing programmes, infrastructures and cooperation, especially, the implementation of Joint Calls.
- To coordinate consultation processes to inform funding agencies and research institutions from both regions about the joint actions.
- To interact with existing platforms for EU and CELAC funding agencies.

WP5 DISSEMINATIONS ACTIVITIES

TASK 5.1: Dissemination activities at international level

The activities carried out so far during the entire duration of the project let to design and continuously update the project website (D5.1) as well as the corresponding Virtual platform for training and short courses (D5.3), together with a series of digital tools for EULANETCERMAT operations based on Web 2.0 technologies including an E-Learning platform and the web site. http://www.netcermat.unlu.edu.ar. Simultaneously, it was possible to generate the corresponding promotional kit (D5.2) developed throughout the framework to support the project communication activities addressed to raise the awareness and social acceptance of the scientific and public audience reaching the broadest possible audience and create a framework for knowledge transfer between regions. The promotional kit comprised a number of documents, images, videos, slideshows, electronic and printed materials, developed as support matter for use on different education and training tasks carried out on past years, in valuing the cross-collaboration between the diverse stakeholders of the project.

EULA-NETCERMAT
"…new materials to society …"
GA 295197.

TASK 5.2: Dissemination activities at regional and national level

In addition, excellence R&I has been spread during the framework of the project, exploiting results and dissemination of the generated knowledge to increase the visibility of the project at regional, national and international level trying to reach the target stakeholders. To do so, a series of training events and project presentations were organized and summarized in the tables below. As a result of such activities, in addition to the training on formulation and evaluation of proposals under H2020 and former FP7, of projects members of LA consortium staff, mainly from UNLU, ADRAM, SENAI and INTEMA at three different levels: 1) Quality-Management-Impact of proposals 2) Evaluation process by external experts and 3) Negotiation process. Impacts on ERA, the significance of ERA and the calls and opportunities of H2020, it has been possible to identify additional opportunities to prepare future proposals based on bilateral or multilateral partnerships addressing ERASMUS MUNDUS or MSCA-RISE calls.

PROJECT PRESENTATION AND PROGRESS TO LOCAL HE TO ACHIEVE THE PROPOSED NETWORKS

Type	Place	Details	Dissemination
First International Meeting of Nanotechnology	UNLU	The meeting was organized by INTA and FAN (Argentinian Foundation of Nanotechnology The meeting aims to strengthen efficiently applied research. Micro and Nanotechnologies are issues of national strategic interest. 4 and 5, November 2014. Responsibility Dra. Alicia Gallo, member of team UNLu, participated as coordinator of a section and she gave a conference	
Symposium VIII Research and Extension of the Department of Education	UNLU	"Practice and prospects of research and extension in the Department of Education" Organizers: Ministry of Research, Graduate and Extension. Education department. Coordination Careers Teachers and Bachelor of Science in Education. UNLu. Date: 9, 10 y 11 December 2014. 14.00 to 17.00: Extension Project. Committee 2. Conference: Teachers and ICT. Silvia Martinelli.	
Seminar "Technologies in Education"	UNLU	Pedagogical University in the Province Buenos Aires. Presentation of the scope of ICT for teaching content of Science and Technology August-November 2015 Responsibility: Silvia Martinelli	

Presentation colleagues and collaborators	UNLU	Distance Education Division of the Department of Education UNLu on work experience in Denmark. November, 12 2015 Responsibility: Silvia Martinelli	
Workshop "Teachers and ICT. Extension Project City Schools	UNLU	No. 20. Lujan. Res. HCS of UNLu No. 623/13 del 16 de diciembre de 2013. August 2014 - December 2015 Professor Martinelli and teachers workshop participants Extension	

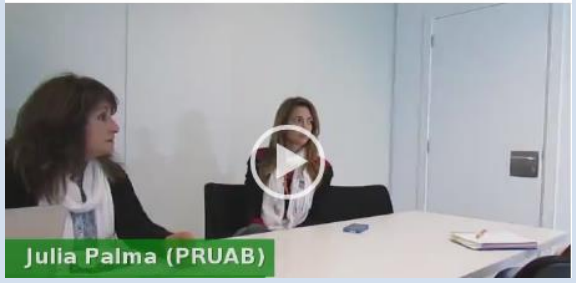
Program "Generar"	UNLU	Presentation Department of Sciences Social UNLu Day presentation programs and projects academic. Wednesday 12 and 19 August and on Wednesday, September 2, 10 am to 12 pm. 2015 Responsibility: Mg. Hernán Bacarini	
Seminar "Technologies in Education" Education Specialization in ICT Mediated	UNLU	Presentation of the scope of ICT for teaching content of Science and Technology at the. April-July 2016 Responsibility: Silvia Martinelli	

Nanotechnologyst For a Day	UNLU	The program Nanotecnólogos por un Día (Nanotechnologyst for a day) seeks to early spread Nanotechnology science in technical high-schools of Argentine. It is a competition where young students have to deep in nanotech to prepare a Paper. Winners visit a high level national laboratory and the schools they represents, receive a contribution to helping improve their classroom-laboratory. The main objective is to raise awareness of the issues involved in this strategic area of our society, involving students, teachers and administrators of educational institutions. The competition is held every year, and researchers visit the educational institutions. Responsibility: Dra. Alicia Gallo is involved in this training. 06/2016	 
EULANETCERMAT final outputs	UAB	July 2016. Project outputs presentation at regional universities representatives, providing examples of key achieved aims and established networks for future international cooperation.	

PROJECT PRESENTATION INCLUDING ACTION PLANS ON LOCAL NEWSPAPERS, LOCAL RADIO, LOCAL TV

Type	Place	Details	Dissemination
Cooperative Innovation: Danish professors visited the UNLu	UNLU CBS	Professors Janni Nielsen and Britta Thomsen, of the Business School of Copenhagen (CBS), visited the Universidad Nacional de Luján (UNLu) where they worked on the generation of a network of knowledge about nanotechnology in connection to the concept of cooperative innovation.	 Prof. Janni Nielsen  Prof. Britta Thomsen  UNLu and CBS partners at the Museo de Bellas Artes "Fernán Félix de Amador", Luján  UNLu and CBS partners during a visit to the municipality of Lujan

Visit of Prof. Ben Eaton to UNLU	UNLU/CBS	Professor Ben Eaton from the Copenhagen Business School (CBS) visited Universidad Nacional de Luján (UNLu) where he gave a talk on Open and closed models of innovation in IT (flyer) and was interviewed by Radio UNLu. H. Barini (UNLU), B. Eaton (CBS)	 

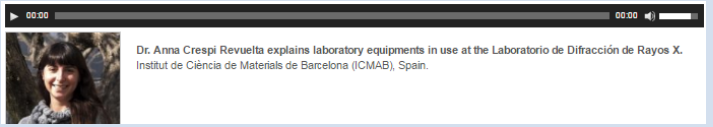
Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/UAB	Video interview concerning the role of a Technology transfer Office to valorize the outputs of the research and international cooperation projects. A. Gallo (UNLU), V. Couste (ICMAB), J. Palma (UAB). http://www.netcermat.unlu.edu.ar/media/interview-virginia-couste-julia-palma-pruab/	  

Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/ICMAB	Video interview to understand the difficulties to build up a spin off in the MACs sector (NANOMOL), derived from the experience gathered at ICMAB-CSIC. The challenges and the support. A. Gallo (UNLU), J. Veciana, N. Ventosa (ICMAB-CSIC) http://www.netcermat.unlu.edu.ar/media/interview-jaume-veciana-nora-ventosa-nanomol/	 

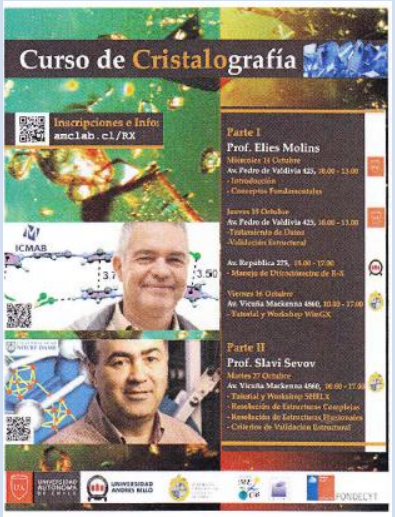
Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/ICMAB	Video interview to summarize the international cooperation activities carried so far during the EULANETCERMAT project at ICMAB-CSIC. A. Gallo (UNLU), N. Csany (ICMAB-CSIC) http://www.netcermat.unlu.edu.ar/media/interview-nieves-casan-icmab/	 

Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/ICMAB	Video interview that gathers the presentation of the international cooperation unit, the roles of a technological partner within international partnerships and the role of women within the scientific and technology transfer world. A. Gallo (UNLU), S. Garelik (ICMAB-CSIC). http://www.netcermat.unlu.edu.ar/media/interview-susana-garelik-icmab/	  

Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/ICMAB	Video interview that provides additional examples of technology transfer within the ceramic sector by using the research developed so far within ICMAB-CSIC and provide examples to bridge the gap between research and the market within the ceramics sector at MATGAS center. A. Gallo (UNLU) L. Vega (MATGAS). http://www.netcermat.unlu.edu.ar/media/interview-lourdes-vega-matgas/	 

Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/ICMAB	Audio interview to an ICMAB-CSIC ER to gather information on the laboratory equipment in use at the Electronic Microscopy Service at ICMAB facilities http://www.netcermat.unlu.edu.ar/media/	
Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/ICMAB	Audio interview to an ICMAB-CSIC ER to gather information on the X-Ray diffraction Laboratory and the equipment in use at ICMAB facilities http://www.netcermat.unlu.edu.ar/media/	
Series of interviews about topics derived from EULANETCERMAT research, aims and derived outputs.	UNLU/CBS	Audio interview to an CBS ERs during dialogues with the working groups of the GENERAR program about advanced studies about Knowledge and Innovation Management within the ceramics material sector http://www.netcermat.unlu.edu.ar/media/	

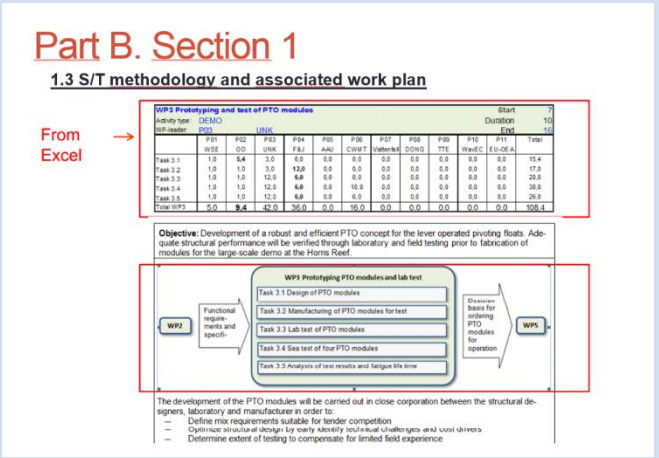
HIGH LEVEL STUDENTS AND LOCAL POPULATIONS TRAINING COURSES (IN-SITU and ON-LINE)

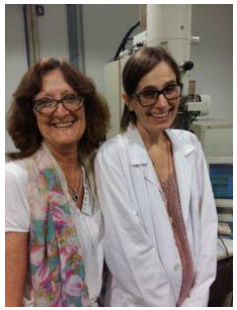
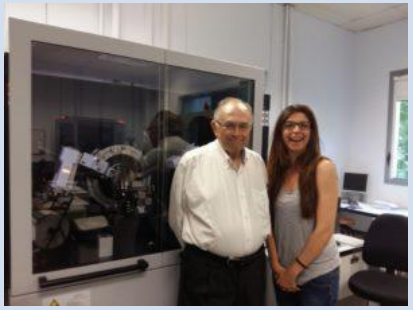
Place	Details	Dissemination
UCH	Elies Molins from (ICMAB-CSIC) during 2014 provided specific training and R&D knowledge transfer activities through the following courses • X-ray diffraction on single crystals and structure solving • Plenary lecture during the X Argentinean Crystallography Association meeting	

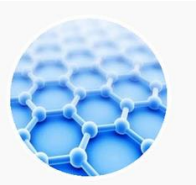
UCH	Elies Molins from (ICMAB-CSIC) during 2015 provided specific training and R&D knowledge transfer activities through the following courses • X-ray diffraction on single crystals and structure solving • "Climate Change and Materials Science" • Plenary conference during the 2"d International Conference on Materials Science (ICMS 3)	
INTEMA	Dr. S. Uheida from KTH provided a training at INTEMA facilities related to the use of nanostructured metal oxide films, nanocomposites dielectrics, and others during his secondment in 2015. • Implantation of nanotechnology in the field of water treatment.	

UNLU	Prof. Ben Eaton from CBS provided a course at UNLU facilities during 2015 addressing innovation models related to the advanced ceramic materials application to the IT sector, entitled • Open and closed innovation models in the IT sector

UNLU	Dr. Gustavo Pérez from UAB provided during 2016 a course at UNLU addressed to the proper implementation and project management of proposals addressing H2020 framework programme



ICMAB-CSIC	Yearly periodic training events provided at ICMAB-CSIC facilities for the use of • Scanning Probe Microscope (SPM), focusing on its employ as a tool to explore submicrometric topographic and electrical features in thin films of oxides and ceramic-based materials. • Employ of Friction Force Microscopy (FFM), Conducting Atomic Force Microscopy (C-AFM) and Kelvin Probe Microscopy (KPM) in oxide thin films. • Introduction to the Piezoresponse Microscopy (PFM) as a tool for investigating ceramic-based materials. • Learning the adequate methodologies and software for data analysis.	
INTEMA/ICMAB-CSIC	Mr. Pablo Botta from INTEMA, attending to the following workshops • "ALBA Synchrotron, new instrumentation for Nanoscience and Molecular Materials Characterization", held at ALBA Synchrotron Light Source (Barcelona) on November 14-15, 2013. • "Magnetic and electric characterization at low temperatures", held at ICMAB on November 25, 2013.	



WP6 PROJECT MANAGEMENT

The activities carried out so far during this period concerning WP6 are further detailed under the project management section of this report.

• RESULTS AND DEGREE TO WHICH THE OBJECTIVES WERE MET;

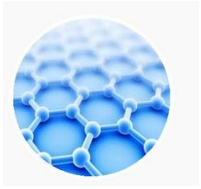
- A total of 116 secondments, equivalent to 149.79 p/m
- Preparation of 8 different proposals including different members of the partnership under different FP7 and H2020 calls, being 2 successfully granted for a total of 1.89 M €
- Up to 12 relevant basic and applied science applications based on advanced ceramic materials
- 11 articles in SCI publications
- 22 secondments for a total of 37.45 p/m that let to carry out training activities concerning R&D knowledge transfer related to advanced ceramics synthesis, and characterization.
- 3 organized workshops on with a total number of attendants of 120 in nanotechnology and advanced ceramic materials topics.
- 16 interviews to different stakeholders relevant to the advanced ceramics value chain available through the website
- 14 specific training events covering a wide range of topics relevant to advanced ceramic materials.
- A series of relevant documents to support innovation and fostering cooperation with industry in EU and LA such as:
    - Methods for co-creating innovation on MACs applied to environment, health and aeronautics
    - Road map to speed up the process from idea generation to implementation of MACs
    - Database of existing EU and LA networks concerning MACs
    - Strategic plans through the corresponding report of socioeconomic and environmental impact of MACs in EU-LA
    - Report on impact to academia, private sector, civil society and regional development related to nanotechnology and application on MACs
    - SWOT of the competitive position of EU-LA MACs sector
    - Strategic plan for future cooperation and bilateral cooperation in H2020 regarding MACs sector
- Technical support and maintenance of the Official Website and the virtual classroom for the dictation of courses. during the framework of the project
- Confection of the modules formats, reports and characterizations of the studies areas.
- Preparation of four Newsletters and dissemination. One every year
- Continuous monitoring of the implemented project management plan.

• LIST SPECIFIC TRAINING RECEIVED ON SCIENTIFIC AND TECHNICAL ASPECTS;

Already detailed for the period under WP5 activities update and progress as well as D5.4 and D5.5.

• RELEVANCE FOR BASIC AND APPLIED SCIENCE AND FOR APPLICATIONS INCLUDING INDUSTRIAL LINKS.

- Development of Structural and magnetic characterization of multiferroic materials based on BiFeO3
- Preparation and characterization of hydroxyapatite and polycaprolactone nano and micro composites for tissue engineering
- Characterization of oxide thin films using Scanning Probe Microscopies
- Synthesis and characterization of TiO2 lamella containing aerogels, cryogels and xerogels
- Preparation of lamellar titania inside aerogels as outstanding photocatalysts in the forefront of scientific and technological research with large implications in air and water treatment, energy
- Synthesis of porous TiO2 doped with Au nanoparticles



- Preparation of titania liogels doped with gold nanoparticles in order to obtain a material with photocatalytic activity and characterization of intermediates and final products has been performed by the appropriated analytical techniques.
- Study of the effect of elastic deformations on the optical and/or vibrational properties of ceramic optical materials like LiSAF and Nb,Er:YAG with widespread use as active medium in solid-state lasers and waveguides.
- Development of coatings of iron oxides containing graphene or graphene oxide, by sequential or simultaneous electrodeposition.
- To develop a process based on nanofibers composites for the removal of arsenic (III, V) species from contaminated Waters.
- Development of nanocomposite material with high specific area able for is functionalization with arsenic adsorbents such as mesoporous silica nanoparticles (MSN) covalently linked to polyacrylonitrile (PAN) nanofibers and functionalized with different organic groups, such as amino, thiol and carboxylic.
- Development of nanocomposite materials based different structure of rhenium disulphide to be used for the removal of Arsenic from groundwater

CHANGES TO ORIGINAL PROPOSAL.

- No amendments were proposed to the original proposal.

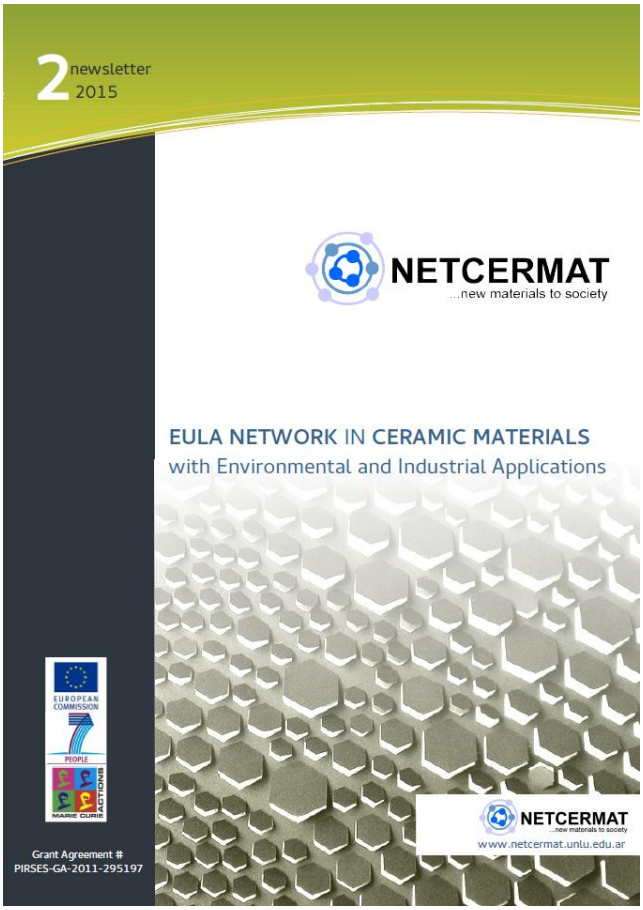
COPIES OF THE MOST RELEVANT PUBLICATIONS AND REPORTS AS WELL AS ABSTRACTS OF THE OTHER PUBLICATIONS AND MANUSCRIPTS.

All the dissemination and communication results are included within D5,4, D5,5 and D5,6. The snapshot provided below demonstrates that 11 publications have been accepted in international journals, derived from the activities carried out during the framework of the project. Such information is also available under the corresponding section of the scientific reporting of the grant management.

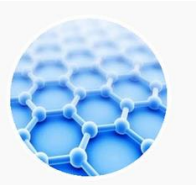
Project Publications (Peer reviewed publication)

Order Nº	Nº	D.O.I.	Title	Author(s)	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Date of publication	Relevant pages	Open access is/will be provided to this publication	Status	Actions
	1	http://dx.doi.org/10.1016/j.ica.2012.09.040	Synthesis and structure of some heterobimetallic complexes having a polyalkyl-s-indacenyl spacer	César Morales-Verdejo , Ivan Martinez , Desmond Mac-Leod Carey , Ivonne Chavez , Juan Manuel Manriquez , Dimitri Matioszek , Nathalie Saffon , Annie Castel , Pierre Riviere , Elies Molins	Inorganica Chimica Acta	Vol. 394	Elsevier BV	Netherlands	01/01/2013	752-756	No	VALIDATED	
	2		Synthesis, Characterization and DFT Study of a New Family of Pyrazole Derivatives	R.Faúndez, D.Macleod, X.Zárate, C.Bustos, E.Molins, E.Schott	Polyhedron	81	Elsevier Limited		01/01/2014	414-420	No	VALIDATED	
	3	10.1016/j.poly.2014.06.002	Synthesis, characterization and DFT study of a new family of pyrazole derivatives	Rodrigo Faundez-Gutierrez , Desmond Macleod-Carey , Ximena Zarate , Carlos Bustos , Elies Molins , Eduardo Schott	Polyhedron	Vol. 81	Elsevier Limited	United Kingdom	11/06/2014	414-420		VALIDATED	
	4		On substituted pyrazole derivatives. 1,3-Methyl-4-[(Z)-2-(4-methylphenyl)hydrazin-1-ylidene]-1-[3-nitrophenyl)-1H-pyrazol-5(4H)-one and3-methyl-4-[(Z)-2-(4-methylphenyl)hydrazin-1-ylidene]-1-[4-(trifluoromethyl)phenyl]-1H-pyrazol-5(4H)-one	Luis Alvarez-Thon, Carlos Bustos, Elies Molins, Maria Teresa Garland andRicardo Baggio	Acta Crystallographica Section C: Crystal Structure Communications	C70	International Union of Crystallography		01/09/2014	837-842	Yes	VALIDATED	
	5	10.1016/j.supflu.2014.10.007	The effect of ethyl-lactate and ethyl-acetate plasticizers on PCL and PCL-HA composites foamed with supercritical CO2	A. Salerno , M.A. Fanovich , C. Domingo Pascual	Journal of Supercritical Fluids	Vol. 95	Elsevier	Netherlands	01/11/2014	394-406	No	VALIDATED	
	6	10.1107/S2053229614017173	On substituted pyrazole derivatives. 1. 3-Methyl-4-[(Z)-2-(4-methylphenyl)hydrazin-1-ylidene]-1-(3-nitrophenyl)-1 H -pyrazol-5(4 H)-one and 3-methyl-4-[(Z)-2-(4-methylphenyl)hydrazin-1-ylidene]-1-[4-(trifluoromethyl)phenyl]-1 H -pyrazol-5(4 H)-one	Luis Alvarez-Thon , Carlos Bustos , Elies Molins , Maria Teresa Garland , Ricardo Baggio	Acta Crystallographica Section C: Crystal Structure Communications	Vol. 70/Issue 9	International Union of Crystallography		01/09/2014	837-842	No	VALIDATED	
	7	10.1039/C4NJ02427C	New 3,4,5-trisubstituted isoxazole derivatives with potential biological properties	Carlos Bustos , Elies Molins , Juan-Guillermo Cárcamo , Marcelo N. Aguilar , Christian Sánchez , Ignacio Moreno-Villoslada , Hiroyuki Nishide , Angela Mesías-Salazar , Ximena Zarate , Eduardo Schott	New Journal of Chemistry	Vol. 39/Issue 6	Royal Society of Chemistry	United Kingdom	01/01/2015	4295-4307	No	VALIDATED	
	8	http://dx.doi.org/10.1016/j.ica.2015.05.014	A new series of zirconium metallocenes derived from partially alkylated s-indacene with potential applications in the polymerization of ethylene	Juan Felipe Arancda , Cesar Morales-Verdejo , Christopher Adams , Iván Martínez-Díaz , Ivonne Chávez , María Teresa Garland , Rene S. Rojas , Elies Molins , Juan Manuel Manríquez	Inorganica Chimica Acta	Vol. 434	Elsevier BV	Netherlands	01/08/2015	121-126	No	VALIDATED	
	9	10.1039/C5NJ02604K	A family of substituted hydrazonoisoxazolones with potential biological properties	Carlos Bustos , Elies Molins , Juan-Guillermo Cárcamo , Marcelo N. Aguilar , Christian Sánchez , Ignacio Moreno-Villoslada , Hiroyuki Nishide , Ximena Zarate , Eduardo Schott	New Journal of Chemistry	Vol. 40/Issue 3	Royal Society of Chemistry	United Kingdom	01/01/2016	2156-2167	No	VALIDATED	
	10	10.1039/C5RA20090K	Fluorescence probes for both prokaryotic and eukaryotic cells using new Rhenium (I) tricarbonyl complexes with an electron withdrawing ancillary ligand †	Alexander Carreño , Manuel Gacitua , Juan Fuentes , Dayan Paez-Hernandez , Carolina Otero , Juan Pablo Peñaloza , Marcelo Preihe , Elies Molins , Wesley B. Swords , Gerald John Meyer , Juan Manuel Manriquez , Ruben Polanco , Ivonne Chavez , Ramiro Arratia-Perez	New Journal of Chemistry	1	Royal Society of Chemistry	United Kingdom	01/01/2016	1-42	No	VALIDATED	
	11		IHA No. 2016-008 Ferro-ferri-katophorite	F.Colombo, J.Rius, E.Molins, H.Biglia, M.A.Galliski, M.F.Márquez-Zavalía, E.G.A.Baldo and A.Kriscautzky	Mineralogical Magazine	80	Mineralogical Society		01/06/2016	691-697	Yes	VALIDATED	

- Continuous update of the official Web site, which provides information about the project, objectives, relevance, and the participating institutions. Advances in the project are regularly published. Developed and maintained at the Universidad Nacional de Luján. http://www.netcermat.unlu.edu.ar
- Continuous update of the online Educational Support Tools
- Periodic release of the corresponding newsletter issues



Second Newsletter issue. Second issue to be released before the end of year 2015.



3. MANAGEMENT REPORT

MANAGEMENT ACTIVITIES RELATIVE TO THE INITIAL FINANCIAL PLANNING OF THE PROJECT

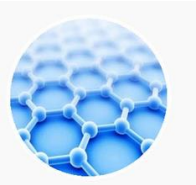
The management activities performed so far has been addressed to maintain the management framework, maintain overall consortium communication and act as the communication channel for all dialogue with the Research Executive Agency. These management activities have ensured the achievement of the project aims within the time and budget set out in the technical annex and ensured the communication and coordination among the partners. Moreover, the management activities let to set up and manage financial accounting records and reporting mechanisms. Overview of the activities carried out by the partnership in terms of management

- Continuous monitoring of the implemented project management plan. D6.1
- General coordination of the project done by UAB (Spain), mainly by Prof. José Luis Briansó and Dr. Gustavo
- Administrative actions carry out by the UAB: payments and communication between UAB and all partners (by Queralt Gonzalez) and Teresa Puga (Geology Department)
- Monitoring of the partnership agreement
- Update of the e-mail distribution list
- Payments and accommodation of the researchers and administrators coming from LA to UAB
- Inform all project consortium members to maintain and retain the required financial records and provide supporting documentation on project spend as required.
- Update multimedia coordination (WEB site, Platform and future Newsletter) and constant contact with UNLu (AR) team under the supervision of Prof. Silvia Martinelli and the UNLu team
- WEBsite: Maintenance of the WEBsite with the contribution of all partners
- Maintenance of the WEBsite contents and Platform; EULANETCERMAT NewsLetter, conferences during the secondments in LA and the EU
- Time schedule of the deliverables and milestones of the project.
- Review and monitoring of the performed secondments and WPs progress.
- Completed second period reporting, communication and update of progress reports to the PO
- Review and upload the Researcher Registration Reports of all partners
- Review and upload to the RPP of the publications released by the partners
- Coordination of all knowledge management, dissemination and clustering activities.
- Review of the deliverables contents before submitting to the RPP

IDENTIFICATION OF PROBLEMS ENCOUNTERED AND CORRECTIVE ACTION TAKEN:

A. Some partners express reluctance and reduced proactivity to complete the scheduled secondments on time e.g. UFMG while others have already expended their outgoing secondments to EU partners such as INTEMA. On the other hand, CSIC communicated the coordinator the demand for more incoming secondments. Such situation was reported to the PO. Unfortunately, despite the coordination efforts to fulfill on-time the scheduled secondments through constant communication with the involved partners it has been impossible to reach the initial agreed number that hinders the implementation and submission on time of three deliverables.

B. Some intra-EU and intra-LA mobility problems makes it difficult to gather all members of the consortium for some events, this real problem for the planned training courses, meetings and seminars in EU or LA (Furthermore, the sum allowed (2.100 EUR/month), does not cover the overall expenses such as flight tickets, hotel and per-diem. Corrective action taken: A possible corrective action that the consortium implemented, was to co-finance by own projects some



secondments, this was the solution for the EU partners to attend the KoM in Brussels or other mobility between EU countries during the first period Monitoring of the performed mobilities during the first year.

4. USE AND DISSEMINATION OF FOREGROUND

DISSEMINATION MEASURES, INCLUDING ANY SCIENTIFIC PUBLICATIONS RELATING TO FOREGROUND AND SPECIFY ANY APPLICATIONS FOR PATENTS ETC.

In order to avoid duplications all the requested information concerning the dissemination activities performed so far during the framework of the project is summarized under three deliverables.

D5.5 Project presentation and progress to local HE to achieve the proposed networks.

Based on the networks already identified within D1_3 this deliverable provides a summary of the different dissemination activities carried so far during the framework of the project to several stakeholders (other research units, universities, general public, industrial partners as well as authorities responsible for development national/regional strategies and setting policies related to research specific areas covered by the project) and expand Europe knowledge and expertise in AR-BR and CL and get information and knowledge from these countries. Such activities let to provide an opportunity to promote the deliverables and general results conducted by the NET

D5.4 High level students and local populations training courses (in-situ and on-line)

This deliverable provides a summary of the different training courses developed so far during the framework of the project provided at EU and Latin America addressing different topics related to advanced ceramic materials from those mostly related to the scientific application to those related to the entrepreneurship road maps or the possibilities of funding through H2020 and orientation of future project proposals.

D5.6 Project presentation, including action plans, on local newspapers, local radios, local TV

This deliverable provides a summary of the different dissemination actions performed so far, to present the main outputs of the developed action and business plan were presented. Moreover, the dissemination of project's outputs has been performed trying to boost project findings sharing and their replicability in several areas and to unlock relevant research result that could modify productivity, so as to become a driving pattern to be replicated in other countries.

5. ADDITIONAL INFORMATION

EULANETCERMAT consortium keeps working on amplifying the Academic and Industrial contacts in each third country (Argentina, Brazil and Chile). As a result, UAB staff keeps on their participation on the courses organized by the GTEC-Innovation management project financed by UNLu with the economic support of SECYT (Secretaría de Estado de Ciencia y Tecnología). Such trainings are oriented to professional workers (Public and Private sectors). The socio-economic aspects are important in the new proposals. As a result of such activities new ways of international cooperation with EU started, granting the possibility of other project proposals that have been also successfully evaluated (NANOREMAS project under MSCA-2014-RISE) that includes the participation of partners from EULANETCERMAT consortium e.g. UAB, INTEMA and KTH.

Finally, in Brazil, the consortium extends the collaborations in Advanced Materials-Environment with other Brazilian States, like Rio Grande do Sul (FAI-RGS), and Commercial and Industrial Chambers (Caxias do Sul-Rio Grande do Sul) for the identification of his needs, in the sector of efficient environmental technologies, for the treatment of polluted waters caused by industrial activities (textile sector and metal-mechanic industries) The socio-economic aspects are important. Identification of new opportunities, like Erasmus Mundus with Brazil etc. On the other hand, ADRAM and UAB have taken profit of their background and acquired knowledge on ceramics and its relationship to cultural heritage to link with other projects in the region (PEOPLE-IRSES-STRAVAL) for the employment of new materials for cultural heritage restoration.