

MATERIALS HAVE A CRUCIAL ROLE IN CREATING A BETTER LIFE FOR ALL, THE  
E-MRS'S PROFESSOR RODRIGO MARTINS TELLS PEN

# Materials renaissance

The European Materials Research Society (E-MRS) has established the European Affairs Committee, involving such highly reputed personalities as Herbert Von Bose (former director general for Research and Innovation at the European Commission), Gabriel Crean (vice-president for technology at CEA, France), Jean Pierre Massue (member of the presidency of the European Academy of Sciences and Arts and past executive secretary of the Council of Europe), and George Kiriakidis (vice-president of E-MRS) and chaired by myself as the immediate past president of E-MRS and the running president of E-MRS Senate. This committee is aimed at building bridges between policy and scientific policy makers and stakeholders from academia and industry, as well as discussing and promoting future European needs concerning sustainability, economic growth and the comfort of our citizens so as to create a better life.

In order to gain a better perspective of the cross-cutting role of materials to promote development and innovation, we fully supported the constitution of the Common House, an initiative launched by the Alliance for Materials to which E-MRS belongs that was well received by the Commission as a way to promote the strategies of the future.

## Material scarcity

Today, the industrial and world population explosions have led to the intensive use of materials which are becoming increasingly scarce. In light of this, we instigated the discussion of how these materials can be put to better use, and from this has stemmed our involvement in network projects like InnoMatNet, which hopes to advance the goal of an innovation society by developing a flexible approach between teams of innovators, thereby linking materials laboratories with industry (particularly the creative industry), as well as other innovation actors and, furthermore, aims to provide support to help them bring new products and processes to market.

From this perspective, we have now begun to focus on strategic targets for a sustainable future, on the rational use of materials and on the exploitation of materials to the extreme of their functionalities, mainly at the nanoscale level (that is, to attempt to develop the same systems using at least 100 times fewer materials components than in the past). We are also looking for better designs and for better materials integration and, finally, to promote a long term strategy for substitution (the synthesis of novel inorganic atoms and molecules able to substitute the ones currently being used), which is now mainly centred around inorganics and hybrid structures that mimic what we already know from Nature and the organic side of materials, for which multiscale modelling action is crucial.

Europe is now facing a tremendous challenge exacerbated by the need to promote economic growth and the creation of jobs while simultaneously generating creativity and promoting innovation. Europe, more now than ever before, needs to combine efforts in knowledge and innovation, and needs to target excellence and competitiveness so as to boost Europe in all areas in which it aims to be competitive, from common regional needs to global market competition.

## Support

Today, most of these actions are supported via different channels in regional industrial needs for deployment that are related to structural funds and which are translated by the promotion of smart specialisation clusters, while the component related to development and innovation are connected to funds through Horizon 2020. Throughout all of this, materials are a cross-cutting element. We therefore need to begin to think differently about materials; we must focus on the renaissance taking place in materials development as the main tool to innovate our life and industry as we strive towards boosting economic growth and providing enhanced comfort to Europe's citizens. This can be achieved by targeting smart/intelligent entities from the points of design, synthesis, processing and production where characterisation must be present at all levels.

Our main targets moving forwards are focused on promoting materials for health and materials for energy as key areas for development – everyone needs energy, and for a better quality of life we require innovative materials for health applications – for which multiscale modelling is a tool we need.

We will also work to promote networks of infrastructures which are able to cover all aspects of the materials value chain, from development and processing to the integration in systems, and we also hope to reinforce inter-regional development in the medium and long terms which will include all aspects, from concept to market, from which we hope to contribute to a sustainable use of resources, and reduce the time it takes to satisfy the needs and demands of both the market and Europe's citizens, thereby helping to create a better life for all.



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