New polymers for applications in nanopatterning and nanolithography

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The Cidetec Technological Centre continues to invest in nanotechnology development with its participation in the European NAPA (Emerging Nanopatterning Methods) project. The research institution is directing a working subgroup to develop new thermoplastic polymers for applications in nanopatterning and nanolithography.

The main objective of the European NAPA integrated project is to provide low-cost processes and tools that meet the needs of nanoprinting processes and required for the development of devices to be employed in various applications in nanoelectronics, nanobiotechnology, nanophotonics, etc. In order to achieve this, the project was split into three main lines of research: nanoimprint lithography, MEMS-based nanopatterning and soft lithography). In each of these, the research was organised with three different focuses: materials, tools and simulation. The project was sub-divided into 6 subprojects, each involving a number of working groups whose remit had been clearly laid down. CIDETEC is leading one of these working groups, the main function of which is the development of new thermoplastic polymers with properties for applications in nanopatterning lithography.

To this end, by means of living radical polymerisation (LRP), a number of low polydispersion polymethacrylates and copolymers and other polymeric materials designed for this application have been randomly synthesised.

The NAPA consortium has brought together almost all the research

groups in Europe working in the emerging field of nanopatterning. The project, co-ordinated by VTT (the Technical Research Centre of Finland), is made up of 35 associated members belonging to small- and medium-sized businesses, various European research universities and laboratories such as CEA from France, IBM from, Micro Resist Technology GmbH from Germany, etc. Together these have drawn together a wide range of know-how about nanomanufacturing and developed a highly important research effort involving some 3,500 scientists.

Another interesting part of this project is its educational aspect, with positive socioeconomic benefits, forecasting an increase in employment at a European level. The consortium is organising training courses and seminars for new scientists, with the aim of boosting academic and practical training in areas related to research into nanotechnologies.

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