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NEW MATERIALS

2009

The 1970s saw the emergence of new materials: macromaterials (complex composites) first of all, and then nanomaterials (artificial structures at molecular level). Relative to traditional materials, they offered multiple advantages in terms of reliability, longevity, precision and lightness. The nanomaterials soon made their entry into nearly all the industrial fields, including aeronautics (Airbus 380) and aerospace, automobile manufacture, the medical sector, electrical and electronic construction and even musical instruments. Notwithstanding the revolutionary promise of the miniaturisation race, however, the new materials have not yet been adequately recycled because of the costs involved and the very number and complexity of their components. But these developments are also opening up an enormous market as laboratories and research departments recruit research engineers with diplomas from elite schools specialised in materials or PhDs in physical science, solid-state physics or materials science. France, which is one of the leaders in the exploration of nanosystems (along with the United States, Japan and Germany), is investing in research and wants to attract high-level students. Grenoble, for example, can pride itself on being the European centre for microand nanotechnologies with LETI (applied research laboratory in electronics), which has been working for many years on silicium technology for microelectronics. MINATEC (Centre for Innovation in Micro- and Nanotechnology, which has grown out of increased co-operation between LETI and the Institut National Polytechnique in Grenoble) is scheduled to host some 3,500 researchers and technicians as of 2006.

See the data sheets on “Engineering”, “Environment” and “Sustainable development” as well.

RESEARCH UNITS

- LAAS (Toulouse, CNRS) Laboratory for Systems Analysis and Architecture
http://www.insa-toulouse.fr
- LETI-CEA (Grenoble, Atomic Energy Commission) Laboratory of Electronics and Information Technology
http://www-leti.cea.fr
- IMP Jean Rouxel Materials Institute (institute for materials, materials engineering, and process engineering)
http://www.cnrs-imn.fr
- IEF (Orsay) Institute of Basic Electronics
http://www.u-psud.fr/ief
- LPH (Marcoussis, CNRS) Laboratory of the Physics of Nanostructures
http://www.lpn.cnrs.fr
- INPG : http://www.grenoble-inp.fr
- INPL (including EEIGM : European School of Materials Engineering
http://www.inpl-nancy.fr
- INPT
http://www.inp-toulouse.fr
- Research themes at CEA
http://www-instn.cea.fr/rubrique.php3?id_rubrique=65

Keywords

- The « n+i » network offers many programs in materials
http://www.nplusi.com .
- Paris Tech unites 10 schools of engineering and 143 research laboratories
http://www.paristech.fr/fr/etudier_doctorat.html
- The « n+i » network offers many programs in materials
http://www.nplusi.com
- An informational brochure on nanosciences produced by the Ministry of Research
http://www.nanomicro.recherche.gouv.fr
- A database of individuals and institutions active in the field of nanomaterials in France
http://www.nanomateriaux.org
- Pôle MINATEC
http://www.minatec.com
- Ministry of Ecology, Energy, Sustainable Development, and Regional Development
http://www.developpement-durable.gouv.fr
- National Research Agency
http://www.agence-nationale-recherche.fr
- Alfred Kastler Fondation (services for international researchers visiting France)
http://www.fnak.fr
- Bernard Gregory Association (from dissertation to employment)
http://www.abg.asso.fr/