

"Nature produces polysaccharides, EPNOE turns them into materials"



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Network Of Excellence

Business and Industry Club (BIC)

Presentation



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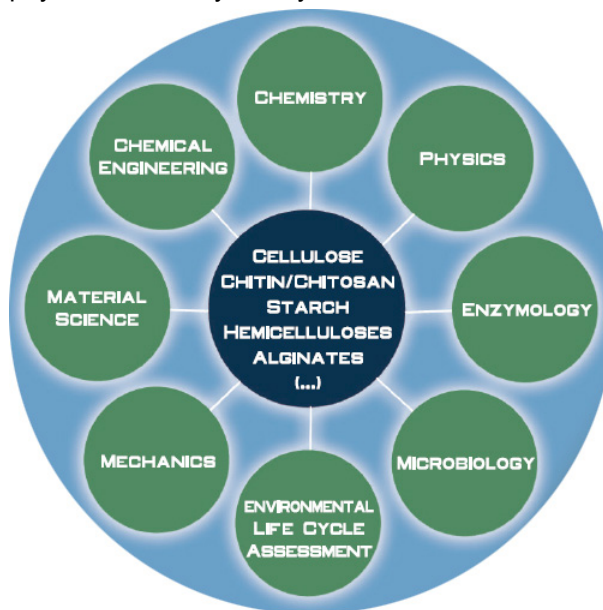
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EPNOE

Polysaccharides are the major sustainable polymers for our future. The development of these materials, which will increasingly replace synthetic polymers, provides major opportunities for industrial innovation.

The **E**uropean **P**olysaccharide **N**etwork **O**f **E**xcellence (called EPNOE) is the only transnational and complete network addressing the challenge of improving existing materials and developing new ones based on polysaccharides.

- EPNOE is made up of 16 major European institutions, universities and research organisations from nine countries focussing on polysaccharide science. These 16 partners are leading research centres and top-ranked universities, which have developed scientific expertise and state-of-the-art technologies in most polysaccharide-related disciplines such as chemistry, chemical engineering, enzymology, biotechnology, biorefinery, modelling, physics, processing, material science, physical chemistry, life cycle assessment and economics.



- EPNOE is organised as an independent, permanent and stable network through a managing organisation called "EPNOE Association". EPNOE Association is a non-profit organisation registered in Paris, France.
- EPNOE is controlled by a Governing Board composed of one representative from each of the 16 EPNOE partners.
- EPNOE is presently headed by Patrick Navard (President, France), Pedro Fardim (Vice-President in charge of education, Finland) and Karin Stana-Kleinschek (Vice-President in charge of research, Slovenia)

The main missions of EPNOE are to establish basic research and education tools for the development of new advanced multifunctional products and materials based on polysaccharides and to offer a collaborative R&D platform to industry (polysaccharide producers and users).



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EPNOE Activities

Management

- Running of a permanent, legal EPNOE structure (EPNOE Association)
- Marketing and economic intelligence activities
- Relations with industry, establishment and activities of the Business and Industry Club

Research

- EPNOE research road map
- Common fundamental research in six Themes
- Development of new measurement tools

Education

- Common academic education curriculum (Master and PhD)
- E-learning lectures
- Creation of dedicated courses
- Organisation of scientific meetings
- Access to information on national-language conference papers

Business and Industry Club (BIC)

The Business and Industry Club (BIC) has been created by EPNOE to build a solid bridge between the 16 EPNOE partners and companies working or planning to work in the polysaccharide field. It is tailored to gain fast transfer and exploitation of knowledge, ideas, new processes, great talent and to offer its members a multidisciplinary and collaborative R&D platform.

The Business and Industry Club is established to:

- Boost relations between industry and EPNOE partners
- Ensure the R&D and education needs of industry are understood by EPNOE partners
- Organise efficient collaborative projects
- Optimise the availability of funding provided by National and European agencies
- Attract and train brilliant students in polysaccharide-related materials science
- Organise a polysaccharide business network
- Contribute to R&D of BIC members (privileged access to recent results, direct contact with EPNOE researchers, early signalling of new trends in science and technology)

BIC members will have access to a set of **six main BIC services** proposed by EPNOE (BIC-1 to BIC-6).



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BIC Services

BIC-1: Access to EPNOE partner databases

- List and description of all on-going PhD and Master Theses
- CV's of Master and PhD students looking for employment
- Name and details of EPNOE researchers with their field of expertise
- EPNOE partners equipment database, called EPNOE Tool Box (internet-searchable database describing a set of over 200 different experimental tools available in EPNOE partners' institutions)
- Slides used in the EPNOE videoed-lectures

BIC-2: EPNOE Research Information

- Full text of non-confidential EPNOE partners' PhD and Master Theses
- Reports on the common basic and non-confidential research undertaken by EPNOE Members
- Invitation to the PhD defence of EPNOE Members' PhD students (where university regulations allow)
- Once a year, the EPNOE partners will produce a review paper on a topic selected by the members of the Business and Industry Club

BIC-3: Strategic and Technological Watch data of EPNOE

- Updated list and description of the major organisations involved in promoting the use of biomass-based polymers
- Information about the participation of EPNOE in consultative or decision-making bodies
- Access to information on national-language conference papers: European countries plus Brazil and other countries of Central and South America (Japan and China under consideration)
- Updated news on polysaccharide science and policy
- Access to EPNOE market studies
- Access to the EPNOE database on major and advanced scientific papers (selection of 2500 articles on cellulose, starch, xylan, mannan and chitosan since 2000)

BIC-4: Organisation of Dedicated Meetings

- Private annual Business and Industry Club scientific conference where EPNOE Members will describe their latest results. Tutorials on hot topics identified by the BIC members
- Annual General Meeting of Business and Industry Club
 - sharing expertise and knowledge, considering technical development affecting company operations
 - building an awareness of new legislation
 - providing a context for discussing scientific and non scientific issues with industrial colleagues, meeting potential customers/partners
 - defining educational needs for knowledge transfer (including running in-house courses for companies)



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BIC-5: Direct interaction with EPNOE

- Contribution to the Annual General Assembly of EPNOE Association
- Participation in defining the basic common research of EPNOE Members (EPNOE Research Road Map). Platform for suggesting basic topics of interest for industry
- Using the expertise of EPNOE partners for building collaborative projects (see list of some recent collaborative projects in this leaflet):
 - fundamental or applied research or development projects funded by a company or a company consortium
 - research projects funded by National agencies
 - European projects

BIC-6: Dedicated Infrastructure to enforce the Business and Industry Club networking activities

- Access to the private Business and Industry Club web site (collaborative platform)
- Promotion of products and expertise of each Business and Industry Club member

Benefits for the BIC members

Joining the Business and Industry Club requires being an Associate Member of EPNOE Association (more information on www.epnoe.eu).

BIC members have the following benefits:

- Sharing EPNOE scientific advances
- Participating in the design of EPNOE research and education roadmaps
- Building collaboration with world-class research institutions
- Being aware of national and European stakeholder groups, policies and trends
- Benchmarking the environmental performance
- Favourable access to some EPNOE courses
- Belonging to a polysaccharide business network



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EPNOE Scientific Partners

- **Centre for Material Forming (CEMEF), ARMINES-Ecole des Mines de Paris/CNRS, France**
(Mechanical and Molecular Modelling, Numerical Simulation, Polymer and Polysaccharide Physics, Material Properties, Rheology,)
- **Department of Chemistry, University of Natural Resources and Applied Life Sciences (BOKU), Austria**
(Organic Chemistry, Wood, Analytical Chemistry, Biochemistry, Pulp and Paper Chemistry)
- **Centre of Excellence for Polysaccharide Research, University of Jena, Germany**
(Polysaccharide Chemistry, Medical and Biomedical Applications, Nanotechnology, Polysaccharide based Diagnostics and Therapeutics, Functional Polymers)
- **Natural Polymer Division, Fraunhofer-Institute for Applied Polymer Research, Germany**
(Polymer and Polysaccharide Process Development and Engineering, Physics, Material Properties, Mechanics, Chemistry, Colloid)
- **VTT Technical Research Centre of Finland, Finland**
(Biocomposites, Biochemistry, Enzymology, Microbiology, Biotechnology, Biopolymer engineering, Nanotechnology, Process Development and Engineering, Food, Pulp and Paper)
- **Federal Research Centre of Forestry and Forest Products, Germany**
(Pulp and Paper Chemical Engineering, Enzymology, Process Development, Chemistry, Material Properties)
- **Department of Chemical Engineering, Abo Akademi University, Finland**
(Pulp and Paper Technology, Biorefinery, Nanomaterials, Physical and Process Chemistry)
- **“Petru Poni” Institute of Macromolecular Chemistry, Romania**
(Chemistry (cellulose and hemicellulose), Functionalisation, Analytical Science)
- **Laboratory for Characterization and Processing of Polymers, University of Maribor, Faculty of Mechanical Engineering, Slovenia**
(Cellulose and Polymer Chemistry, Surface and Material Science, Structure Analysis)
- **Agrotechnology and Food Innovation, University of Wageningen, The Netherlands**
(Bioplastics, Food, Pulp and Paper, Organic & Biochemistry, Enzymology, Nanotechnology, White Biotechnology, Biorefinery, Material and Product Development, Mechanical Testing,
- **Thüringisches Institut für Textil- und Kunststoff-Forschung (TITK), Germany**
(Polymer and Polysaccharide Process Development and Engineering, Chemical Engineering, Dissolution and Fibre Properties)
- **Institut of Biopolymers and Chemical Fibres (IBWCh), Poland**
(Fibres and Textiles, Pulp and Paper, Enzymology, Microbiology, Nanotechnology, Biotechnology, Chemistry, Materials Engineering,)
- **School of Biosciences, Division of Food Sciences, University of Nottingham, UK**
(Food and Colloid Science, Material Properties, Enzymology, Microbiology, Process Development, Molecular Hydrodynamics, Extrusion processing)
- **Christian Doppler Laboratory for Textile and Fibre Chemistry in Cellulosics, Research Institute of Textile Chemistry and Textile Physics, University of Innsbruck, Austria**
(Textile science, Fibre Physics, Material Properties, Mechanical Testing of Fibres, Biotechnology, Process Development, Chemistry)



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- **Department of Science, Technology and Society (STS), University of Utrecht, The Netherlands**
(Environmental Life Cycle Assessment (LCA), Energy Analysis, Economic Analysis, Analyses of Status Quo and ex-ante Analyses, Target Setting, Market Analyses)
- **Colloid & Rheology Group, Institute of Chemistry, University of Graz, Austria**
(Interface and Surface Processes, Polymer Compounding, Membrane Characterisation, Nanotechnology, Process Development, Colloidal Systems, Pulp and Paper)

Some on-going collaborative research projects

EPNOE partners are currently engaged in more than 170 collaborative R&D projects with companies for a total budget of more than 13 M€ (2006).

A large part of these projects are receiving public funds through the European Commission or National Agencies.

A selected list of some on-going projects coordinated by EPNOE partners:

- "Market analysis of bio-based polymers for large-scale applications (PROBIP 2008)", co-funded by EPNOE and European Bioplastic, to be finalised by mid 2008
- "New cellulose derivatives from wood for high-value products (NEWCELL)", in collaboration with nine companies, funded by TEKES (Finland) and VINNOVA (Sweden)
- "Innovative solvent concepts for technical application", DBU (Deutsche Bundesstiftung Umwelt) project with three companies
- "Dissolution mechanisms of cellulose fibres", consortium of four companies in four different EU countries
- "Properties of ultralight aerocellulose objects", European and Agence Nationale de la Recherche project, in collaboration with ten companies
- "Hyvolution: biorefinery / bio-energy from lignocellulosics", co-funded by DWK (Min Agriculture NL)
- "Life cycle assessment of man-made cellulose fibres", in collaboration with a large cellulose fibre manufacturer
- "Formed porous polysaccharide structures", in collaboration with one major company
- "Life cycle assessment of bio-based packaging films for food packaging", commissioned by a multinational food company, in collaboration with numerous suppliers
- "Lignocellulose Biorefinery", Fachagentur Nachwachsende Rohstoffe project with seven companies
- "New polysaccharide structures from extrusion processing", in collaboration with one major company
- "Xylan, a new paper additive", Bundesministerium für Forschung und Technologie project with three companies
- "Impact of storage conditions of paper wood on the quality of the groundwood", Fachagentur Nachwachsende Rohstoffe project with two companies
- "Innovative concepts for solvents in technical applications", consortium of two EPNOE partners, Deutsche Bundesstiftung Umwelt
- "Multi-purpose synthesis facility for the preparation of polymer additives and functional additives based on renewable and synthetic raw materials", consortium of two EPNOE partners, Thüringer Aufbaubank.



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- "Polysaccharides in wound healing", in collaboration with one major company
- "Cellulose ethers with controlled functionalisation pattern", in collaboration with three companies
- "Polysaccharides in animal feed", in collaboration with six companies
- "Permeability of polysaccharides to volatiles", in collaboration with one major company
- "Surface functionalisation of cellulose matrices using cellulose embedded nano-particles", in collaboration with five companies
- "SurFunCell Surface Functionalisation of Cellulose Materials" – European Commission FP 7 project – , in collaboration with five companies
- "Dissolution and precipitation structures of native polymers in ionic liquids", German Federal Ministry of Consumer Protection, Food and Agriculture project
- "Replacement of liquid ammonia treatment by alkaline swelling agents", funded by FFG "Österreichische Forschungsförderungsgesellschaft" (Austria)