Objective

The aim of SELFMEM is to develop innovation in the field of nanoporous membranes. This will be achieved by taking advantage of the self-assembly properties of block copolymers leading to highly porous membranes with adjustable, regular-sized pores of tailored functionalities. Both polymeric and inorganic (silicon) membranes will be developed. In the case of isoporous polymeric membranes focus will be laid on the formation of integral-asymmetric block copolymer membranes with an isoporous top layer as a function of the block copolymer structure and the preparation conditions. Isoporous inorganic membranes will be prepared by using a thin block copolymer film as a mask for selective etching. The possibilities to systematically vary the pore size and density by varying the block copolymer mask structure will be investigated. The block copolymers will be synthesized by controlled polymerisation techniques (anionic, group transfer, and different radical polymerisations), depending on the chosen monomers. The characterisation during and after formation of the membranes will be carried out by light and various x-ray scattering techniques, by scanning force microscopy, and by different electron microscopic techniques. Both types of membranes will be post-functionalized in order to tune their final properties. The membranes will be tested for their applicability in different areas. Separation of gases (like H2/CO2) and proteins as well as water purification will be addressed in this project. Modeling and theory will support the understanding of the structure formation of these membranes and help to optimise membrane design. The results of SELFMEM will increase European competitiveness in strategic markets such as gas...
purification, water treatment and molecular biology. The consortium consists of 12 partners from 10 countries, including 4 companies from 3 countries.

**Field of Science**

/humanities/arts/modern and contemporary art/film

/natural sciences/chemical sciences/inorganic chemistry/inorganic compounds

/natural sciences/biological sciences/biochemistry/biomolecules/proteins

/natural sciences/biological sciences/molecular biology

/engineering and technology/environmental engineering/energy and fuels/fossil energy/gas

/social sciences/economics and business/business and management/commerce

**Programme(s)**

*FP7-NMP - Specific Programme "Cooperation": Nanosciences, Nanotechnologies, Materials and new Production Technologies*

**Topic(s)**

*NMP-2008-2.1-1 - Nanostructured membrane materials*

**Call for proposal**

FP7-NMP-2008-SMALL-2

*See other projects for this call*

**Funding Scheme**

CP-FP - Small or medium-scale focused research project

**Coordinator**
### Participants (13)

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<th>Organization Name</th>
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<td><strong>€ 444 818</strong></td>
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<td><strong>UNIVERSITE CATHOLIQUE DE LOUVAIN</strong></td>
<td><strong>€ 278 200</strong></td>
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<td>Sandrine Rostaing (Ms.)</td>
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<td>Vincent Kowalczyk (Mr.)</td>
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<td>Susan Wood (Dr.)</td>
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