

## Our Successes

The cutting-edge results are well documented by publications in ISI journals (with an annual average of three peer reviewed papers per researcher). Due to the multidisciplinary nature of the activities of the Institute, these contributions are published in the most prestigious journals in the field of membrane and engineering, such as J. Membrane Science, I & ECR, Chem. Eng J. and in scientific fields of interest, e.g. JACS, J. Phys. Chem., Chrystal growth, Chem. Comm, Angew. Chemie, Biomaterials, Trends in Biotechnology, Biotech & Bioeng, etc.. In addition, some basic aspects have been published in Science and Nature Materials.

ITM internationally renowned researchers are members of the Editorial Board of ISI Journals, editors of books published by well-known publishers, such as Wiley VCH, Elsevier, John Wiley & Sons, De Gruyter. In addition, some of them are editors of the Encyclopedia on Membranes (Springer).

Within the European projects in the past three years, the ITM is coordinating one project and is participating in fifteen others. Some of them fall in the ten case studies recognized by the European Commission.

## Editorial Activities

### Encyclopedia of Membranes

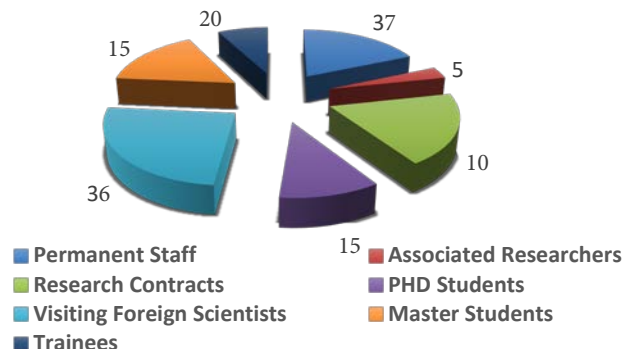


This reference work, published at Springer, covers all aspects of membrane science and technology.

It is aimed at students, graduate students, academic and industrial researchers, practitioners.

The development of the Encyclopedia was undertaken by the Chief Editors, Prof. Enrico Drioli and Dr. Lidietta Giorno.

## Human Resources



The Institute has 37 units of permanent staff and more than 100 temporary units per year represented by research fellows, term contract researchers, visiting professors, associate professors, Ph.D. students, postdoctoral fellowships, high - educational fellowships from national and international Institutions.

## Where we are

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# ISTITUTO PER LA TECNOLOGIA DELLE MEMBRANE CNR - ITM

## INSTITUTE on MEMBRANE TECHNOLOGY

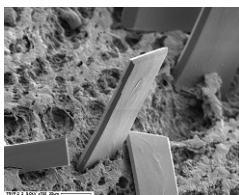


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## Description

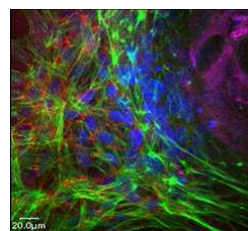
Mission of the Institute on Membrane Technology (ITM) is the research and development in the field of membrane science and engineering. The research activities aim to promote



knowledge, innovation and high-level training in the field of membranes and their application in water treatment, gas separation, bioartificial organs, biotechnology, food and agriculture.

The ITM is internationally recognized for its peculiar skills in the preparation of membranes (organic, inorganic, mixed matrix, biohybrid), transport phenomena, selective separations at molecular level, catalytic membranes, catalytic membrane reactors, membrane contactors (including emulsifiers and crystallizers), integrated membrane processes, membrane in regenerative medicine and tissue engineering.

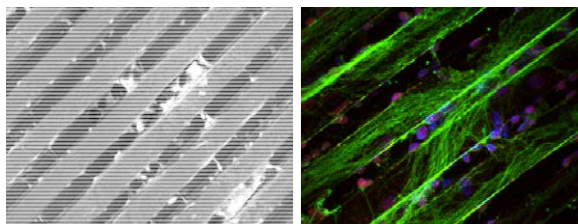
Membranes are applied in strategic sectors such as energy, environment, health, manufacturing. In these areas, membrane technologies have achieved a leading role with a more than 20% annual growth.



As part of national, European and international research projects, other than bilateral agreements, ITM has established collaborations with various Research Institutes, Universities and Companies

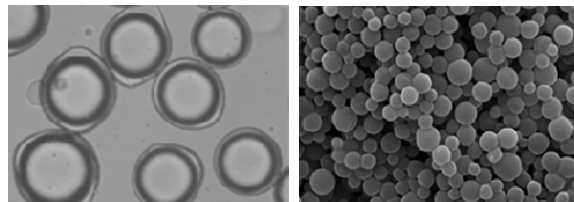
located in Italy, Europe, China, South Korea, Japan, Saudi Arabia, Brazil and United States. This reflects a remarkable ability to attract funds for the development of research and high education, affecting the socio-economic and cultural environment.

The Institute is also involved in the sponsorship and organization of many different Conferences, Training



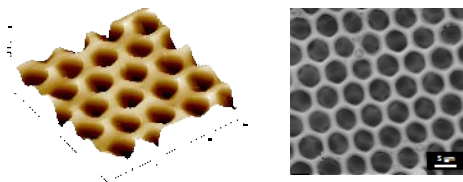
Hippocampal neurons in patterned membrane system

Courses and Workshops, which provide a common platform for senior researchers and young students, from academic and industrial institutions, where to identify areas of mutual research interest.



Core-shell microcapsules and polymeric microspheres obtained by membrane emulsification

The ITM attracts many researchers from renowned Universities and Research Institutions abroad, generating a dynamic and multicultural environment that enriches and stimulates further the activities of the Institute.



AFM and SEM images of Honeycomb membranes

## Research Activities

- Preparation and characterization of (new) polymeric, inorganic, mixed matrix, catalytic, imprinted and biohybrid (flat and hollow fibers) membranes for selective separation and conversion of gas, vapor and liquid phases.
- Molecular design of membranes and properties
- Membranes and membrane reactors in biotechnologies
- Membranes in artificial organs, regenerative medicine and tissue engineering
- Membranes and membrane reactors (catalytic) for production, upgrading and purification of hydrogen
- Membrane gas separation of streams also of industrial interest (flue gas, bio-gas, natural gas)
- Membranes for products and high-tech industrial processes
- Membranes for fuel cells
- Catalysts for chemo, regio and stereo selective production of fine chemicals
- Advanced membrane operations and membrane contactors (including emulsifiers and crystallizers)
- Integrated membrane processes for water treatments, agro-food, nutraceuticals, pharmaceuticals, etc.
- Transport phenomena in membranes and membrane operations
- Multiscale modeling from molecular level to processes
- Prototype development and technology transfer of advanced membrane operations
- Advanced research training

