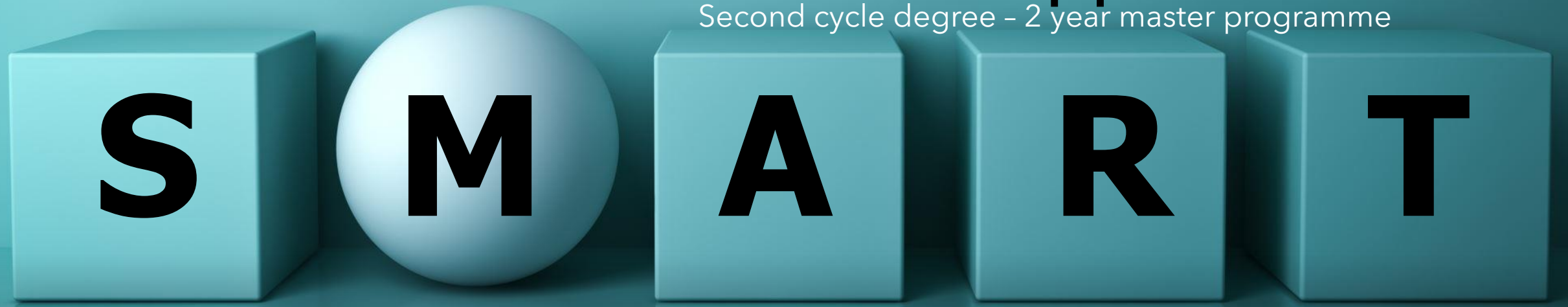
UNIVERSITATEA POLITEHNICA DIN BUCUREȘTI

FACULTATEA DE INGINERIE MEDICALĂ

Smart biomaterials and applications

Second cycle degree – 2 year master programme



for tomorrow's specialists and leaders in biomaterials...

Coordinator Prof. Dr. Eng. Horia IOVU

Degree Programme Tutor Prof. Dr. Eng. Izabela STANCU

Overview

- ✓ EDUCATION LANGUAGE – **ENGLISH – THIS MASTER PROGRAM IS THE ONLY ONE TAUGHT IN ENGLISH AT THE FACULTY OF MEDICAL ENGINEERING, WHICH IS A GREAT ADVANTAGE FOR GETTING A GOOD JOB !**

- ✓ BROAD AND MODERN SPECIALIZATION FIELD – SMART BIOMATERIALS AND STATE-OF-THE-ART TECHNOLOGIES
  - ✓ *competitive training*
  - ✓ *experienced professionals*
  - ✓ *state-of-the-art infrastructure*

- ✓ OPPORTUNITIES FOR STUDYING ABROAD DUE TO THE ENGLISH LANGUAGE
- ✓ PERSONALIZED SPECIALIZATION – *individual research projects*
- ✓ THE INDIVIDUAL RESEARCH ACTIVITY – *coordinated by a member of the teaching staff or by a specialist from a partner institution; topic and programme personalized to match student's interest*

Overview

- ✓ REAL EMPLOYABILITY SKILLS – *solid technical knowledge, decision making, verbal and written communication, lateral and analytical thinking, investigating, team work*
- ✓ GUIDANCE - *The degree programme tutor will help students in the organization of their study/research activities*
- ✓ JOBS – *research & development / consultancy / industry - in Romania or abroad – THIS PROGRAM IS RECOGNIZED ABROAD AS ONE OF THE MAIN EDUCATION PILLARS IN THE BIOMEDICAL FIELD !*
  - ❖ *smart biomaterials,*
  - ❖ *tissue engineering,*
  - ❖ *scaffolds for regenerative medicine,*
  - ❖ *personalized surfaces and implants,*
  - ❖ *artificial tissues and organs,*
  - ❖ *biofunctionalization, bioactive and biomimetic materials,*
  - ❖ *active bionanostructures, nanomaterials,*
  - ❖ *advanced biofabrication*

Course and laboratory diagram

First year

First Semester Weekly: C - 10 h / L,P - 7h / Research - 12 h

Smart Biomaterials (C,L) – Dr. A. Ghebaur
Smart and Biomimetic Biomaterials (C,L) – Prof. Ș. Stoleriu
Active Nanobiostructured Surfaces and Interfaces Engineering (C,L) – Conf. C. Busuioc
Settings of Biomaterials (C,L) – Prof. C. Zaharia
Dental Cements (C,L) – Prof. A. Bădănoiu
Scientific Research and Practice 1 (P)

Second Semester Weekly: C - 12 h / L,P - 4h / Research - 12 h

Artificial Tissues and Organs (C,L) – Conf. A. Lungu
Radiation Interactions with Nanobiomaterials and Living Tissue (C,L) – Conf. C. Busuioc
Advanced Technologies for Biomaterials Processing (C,L) – Prof. Ș. Stoleriu
Advanced Technologies for Biomaterials Processing (C) – Prof. C. Zaharia
Carbon-based Polymeric Biomaterials for Bioengineering (C,L) – Prof. H. Iovu
Tissue Regeneration Engineering with Stem Cells (C) – Conf. M. Ioniță
Scientific Research and Practice 2 (P)

Second year

First semester Weekly: C - 5 h / L,P - 8h/2h / Research - 12 h

Advanced bioceramics (C,L) – Prof. G. Voicu
Protein engineering (C,L) – Prof. H. Iovu
(Bio)Functionalized polymers-scaffolds for regenerative and personalized medicine (C,L/P) – Prof. I. Stancu
Medical analyses and evaluation advanced techniques (C,L) – Conf. E. Crăciun
Scientific research and practice 3 (P)

Second semester Weekly: C - 1 h Research - 27 h

Ethics (C)
Research practice (P) / Prepare dissertation (P)

Master of Science (MSc) in Biomedical Engineering

Opportunities

Practical training in multinational companies

Internships abroad

Study or placement mobilities are possible through international cooperation

Students may participate to research projects;

co-authorship of scientific publication

Research projects /Scientific publications

Interdisciplinary approach in medical bioengineering

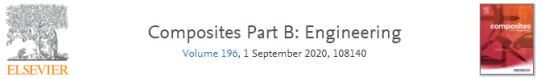
International students are welcome

(students from France, Turkey and Italy performed study and placement mobilities)

International students

Jobs

Papers co-authored by SMART students



Super Carbonaceous Graphene-based structure as a gas separation membrane: A Non-Equilibrium Molecular Dynamics Investigation

Sebastian Muraru, Mariana Ionita

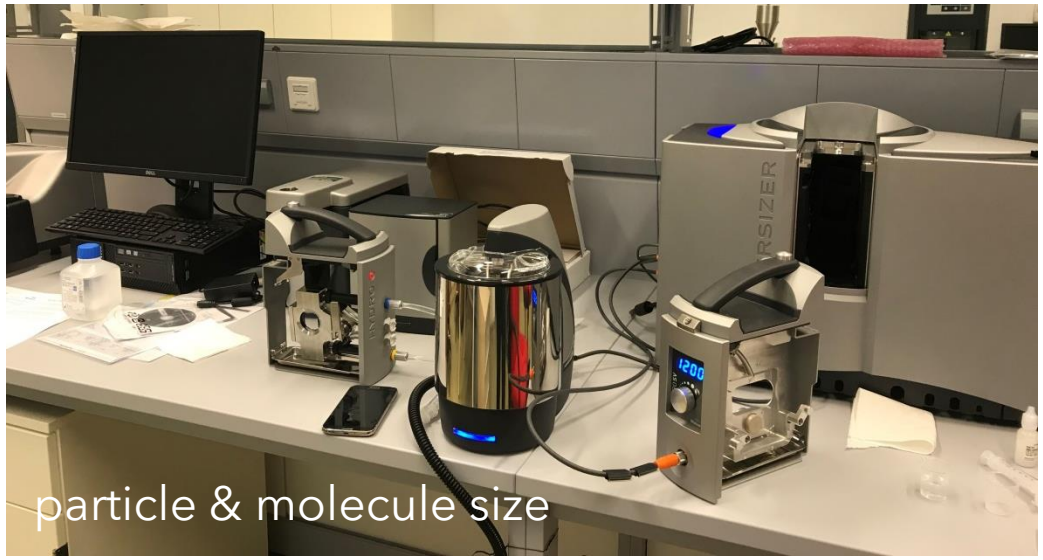
Show more

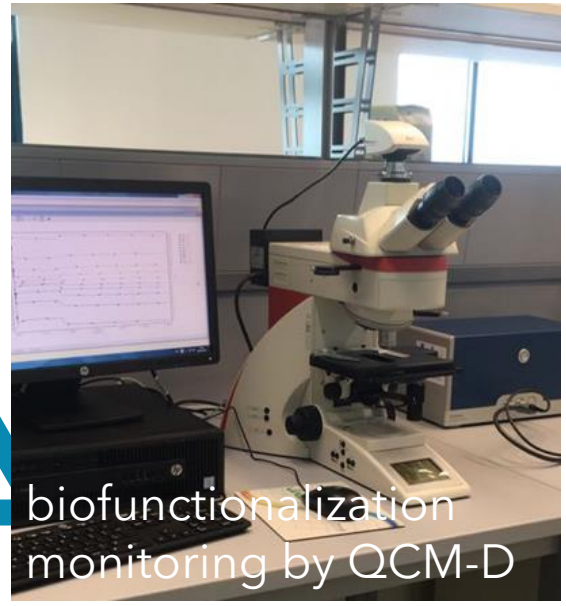
https://doi.org/10.1016/j.compositesb.2020.108140

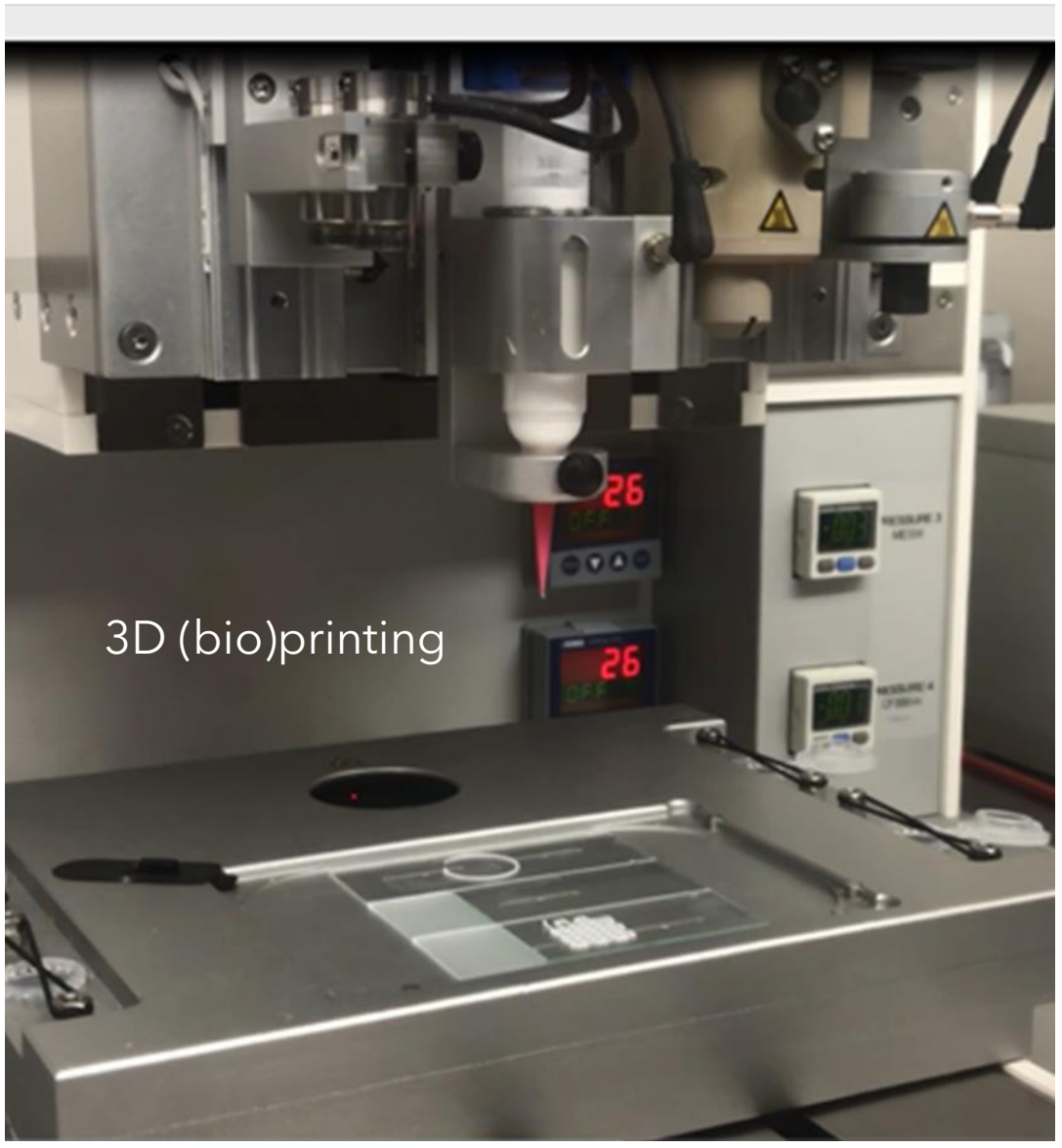
Abstract

Developing clean energy technologies has become a very important topic for research communities worldwide. An alternative to fossil fuels, hydrogen-base fuels display their own weaknesses such as the poisoning of the precious metal catalyst which controls the reaction. Thus, we present an investigation relying on non-equilibrium molecular dynamics (NEMD) of a complex multi-layer graphene separation membrane prototype, with its interlayer distance kept constant by graphene walls and the purpose of gradually separating H_2 molecules out of a mixture containing H_2, CH_4, CO_2, CO, N_2 and H_2O molecules. We have found the design to be capable of high selectivity and have determined the permeance to hydrogen of the setup to be higher than several recently developed polymer and graphene-based membranes. Although too early to expect it to be built in a laboratory setting, we believe similar structures will be available in the future.

State-of-the-art laboratories similar with famous universities in the world- advanced fabrication and characterization







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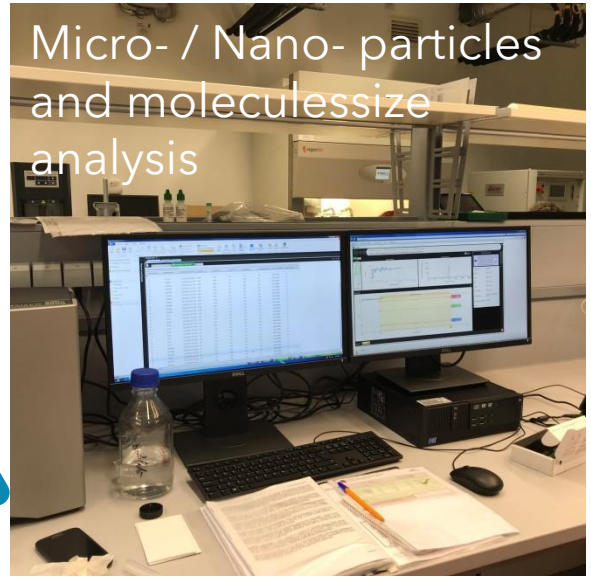

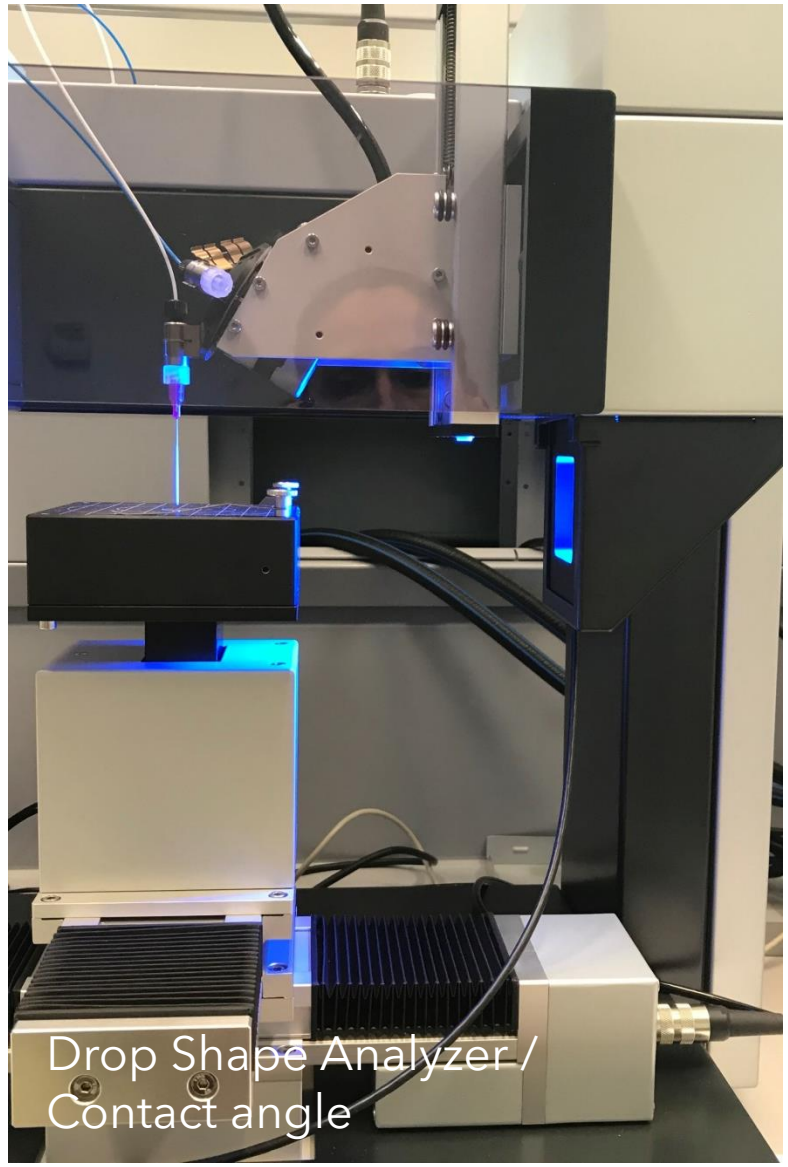

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