

Amirkabir University of Technology
(Tehran Polytechnic)

AUT - DFG

Joint Matchmaking Webinar

April 2021

Research Group CV

1. **Professor Mehdi Dehghan**, Professor of the Department of Applied Mathematics, Faculty of Mathematics and Computer Sciences, Amirkabir University of Technology, No. 424, Hafez Avenue, Tehran, IRAN,
2. **Dr. Mostafa Abbaszadeh**, Assistant Professor of the Department of Applied Mathematics, Faculty of Mathematics and Computer Sciences, Amirkabir University of Technology, No. 424, Hafez Avenue, Tehran, IRAN,
3. **Professor Thomas Wick**, Head of Center of Scientific Computing Institute of Applied Mathematics Leibniz University Hannover Welfengarten 1 30167 Hannover, Germany,
4. **Dr. Amirreza Khodadadian**, Institute of Applied Mathematics, Leibniz University of Hannover, Welfengarten 1, 30167 Hannover, Germany

Research Group Interest

- 1- Stochastic partial differential equations (PDEs)
- 2- Uncertainty quantification
- 3- Numerical methods for PDEs
- 4- Computational Mechanics
- 5- Numerical modeling of nonstationary, nonlinear, coupled PDE systems
 - Multiphysics (fluid-structure interaction, reactive flow, porous media)
 - coupled variational inequality systems such as variational phase-field fracture

Group Research/Industrial Projects

Professor Thomas Wick:

09/2021–2025 Computational Mechanics Techniques in High Dimensions (CoMeTeNd)

in collaboration with ENS Paris-Saclay, IRTG 2657 (funded by DFG)

10/2019-09/2022 DFG Project with Ira Neitzel (Univ. Bonn) and Winnifried Wollner (TU Darmstadt)

DFG-SPP 1962

04/2018-03/2021 DFG Project with Mirjam Walloth and Winnifried Wollner

DFG-SPP 1748

since 2017 Member of the cluster of excellence PhoenixD

DFG-SPP 1748

08/2017 - 07/2020 Goal-Oriented Error Control for Phase-Field Fracture Coupled to Multiphysics Problems

FWF stand-alone project P-29181

10/2013-09/2014 Feodor Lynen Research Fellowship of the Alexander von Humboldt foundation

Dr. Amirreza Khodadadian:

Nanowire FET Biosensor Design

At TU Wien (in 2017), I was funded by Shezan Innovation Center (e 12 K) in order to design and develop biological sensors. The devices are used to detect cancer cells such as prostate and breast tumors. In this project, we use the PDE-based systems like drift-diffusion, Poisson-Boltzmann, and Stokes equations to model the electrochemical behavior of the sensors. The project was successfully completed.

Group Supervised Labs

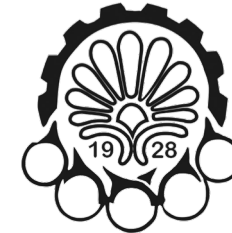
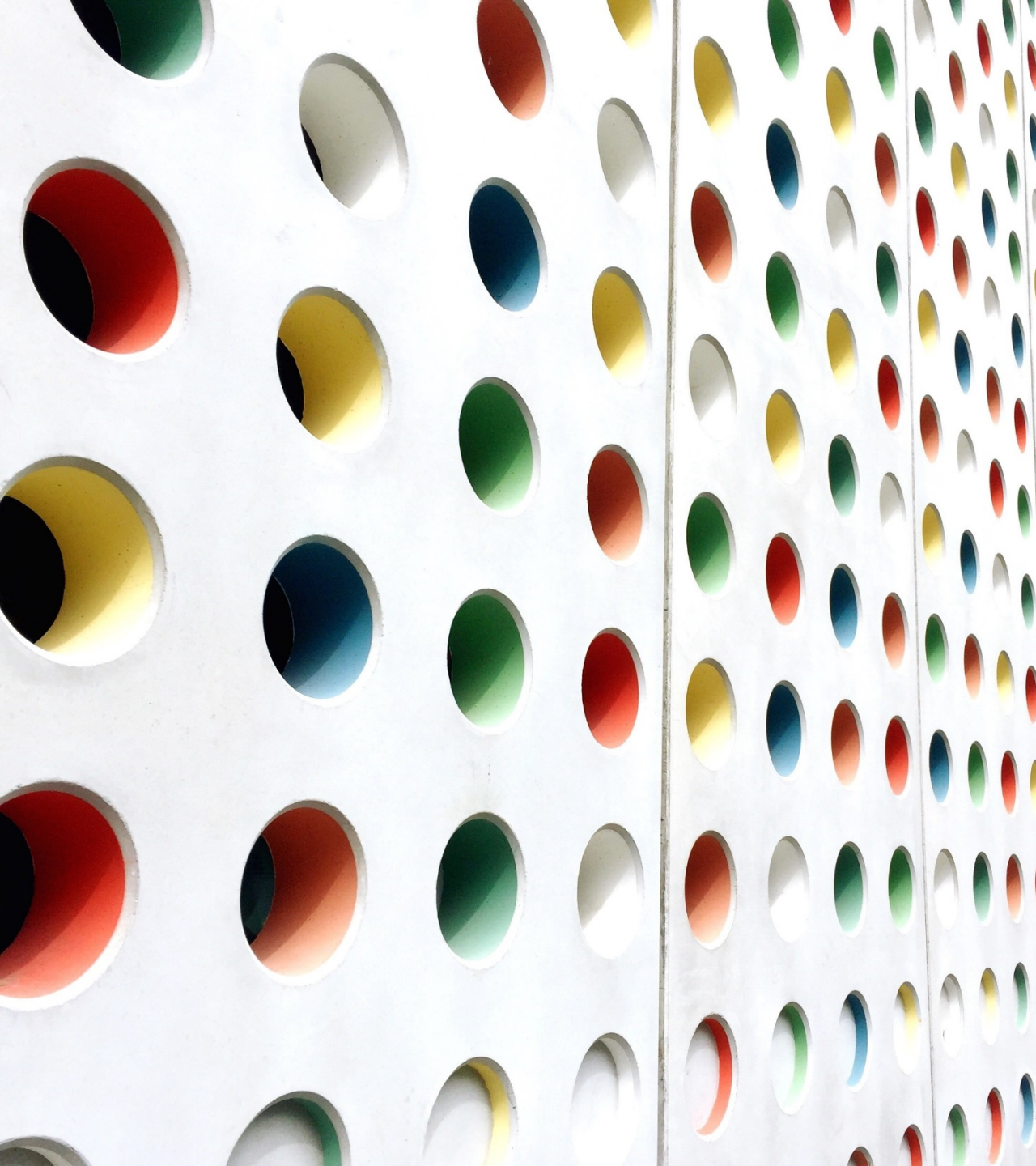
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Dr. Mostafa Abbaszadeh, m.abbaszadeh@aut.ac.ir

Professor Thomas Wick, thomas.wick@ifam.uni-hannover.de

Dr. Amirreza Khodadadian, khodadadian@ifam.uni-hannover.de



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Research Group CV



Dr. Ehsan Amani

Assistant professor, Thermofluid Group, Mechanical Engineering Department, Amirkabir University of Technology, Tehran, Iran

✉ Room 788, Mechanical Engineering Dept., Tehran Polytechnic University, 424 Hafez Avenue, P.O. Box: 15875-4413, Tehran, Iran

✉ eh.amani@gmail.com, eamani@aut.ac.ir

Research Group Interest

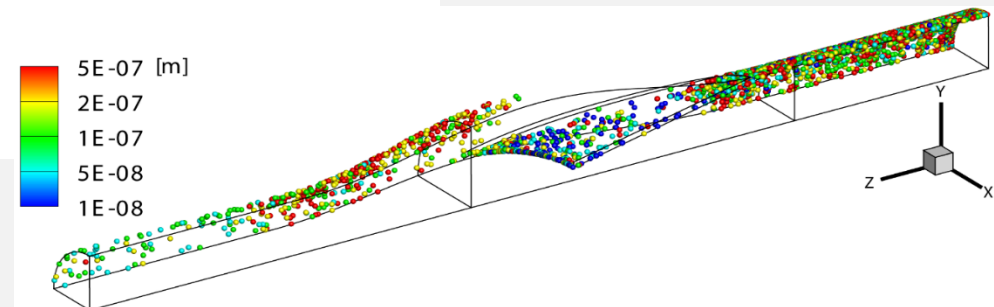
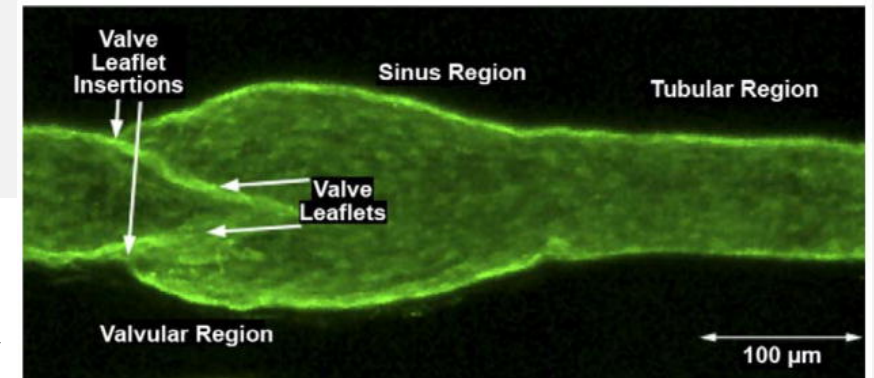
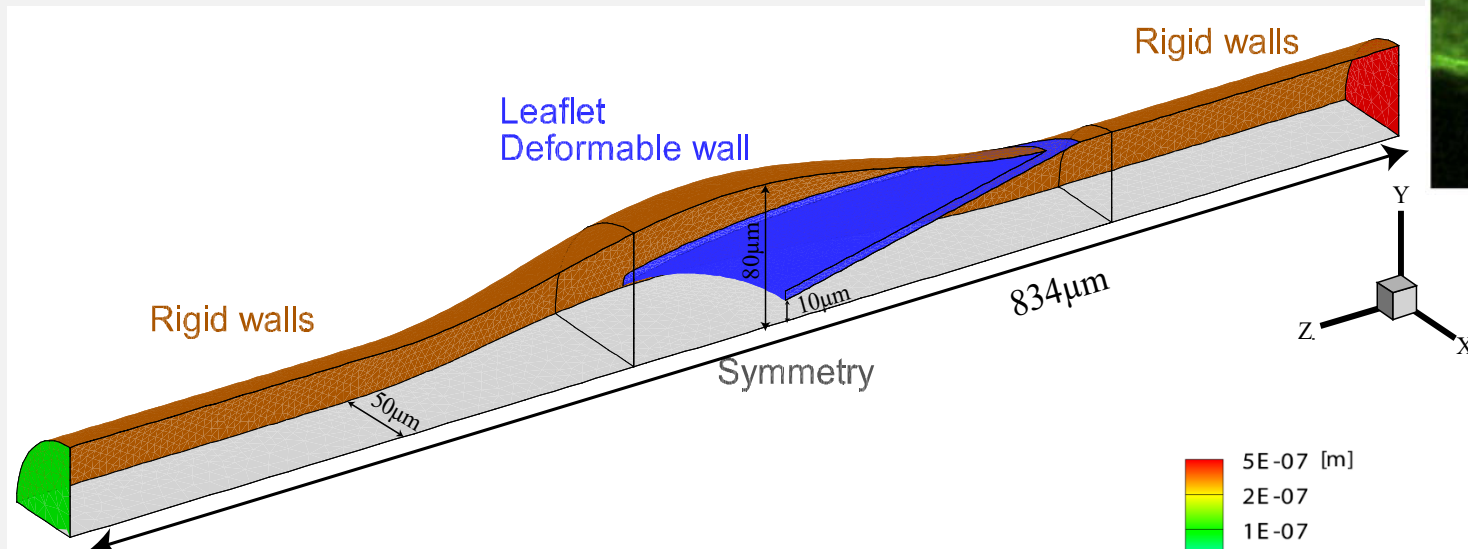
- **Computational Fluid Dynamics (CFD)**
- **Multiphase flows and multiscale simulations**
- **Turbulent flows**
- **Bioengineering and drug delivery**

Dr. Amani's research group

Group Research/Industrial Projects

□ Multiphase flows

✓ Drug delivery via the lymphatic system ▼ ►

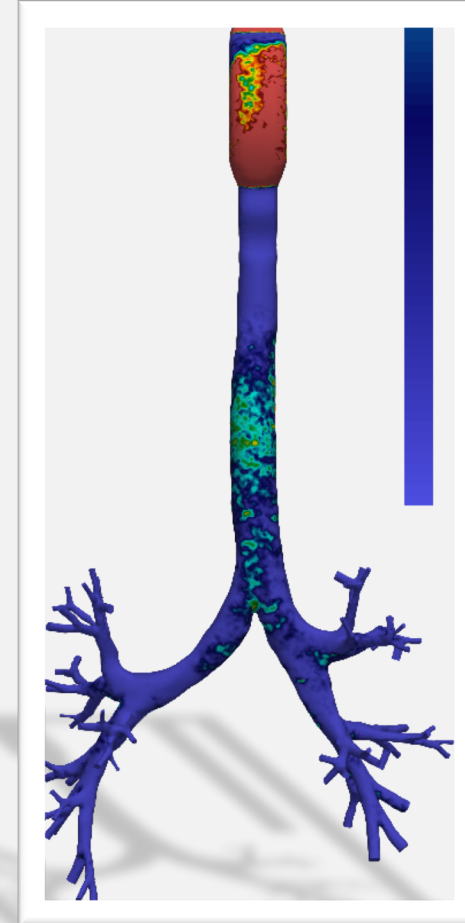
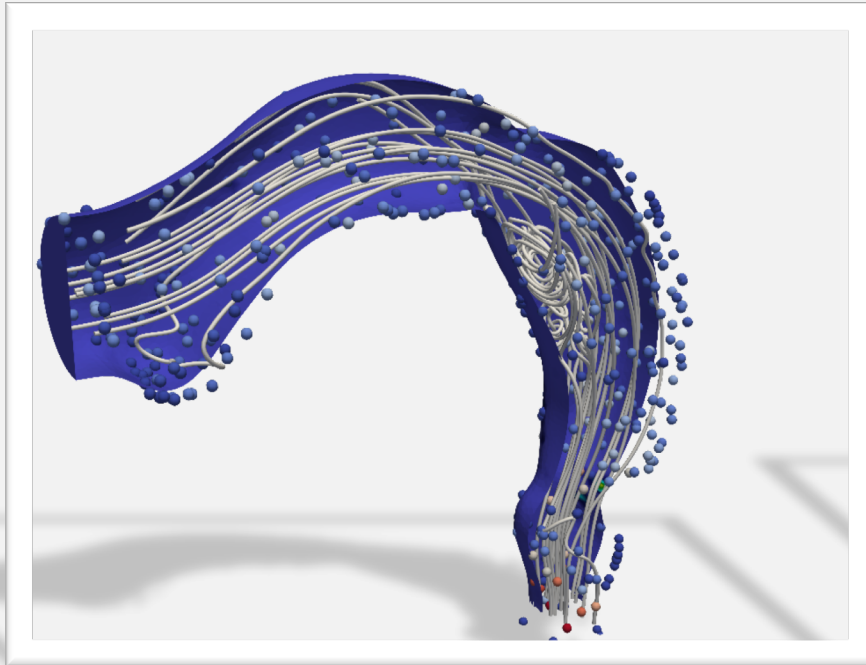


Dr. Amani's research group

Group Research/Industrial Projects

☐ Multiphase flows

✓ Pulmonary drug delivery ▼ ►

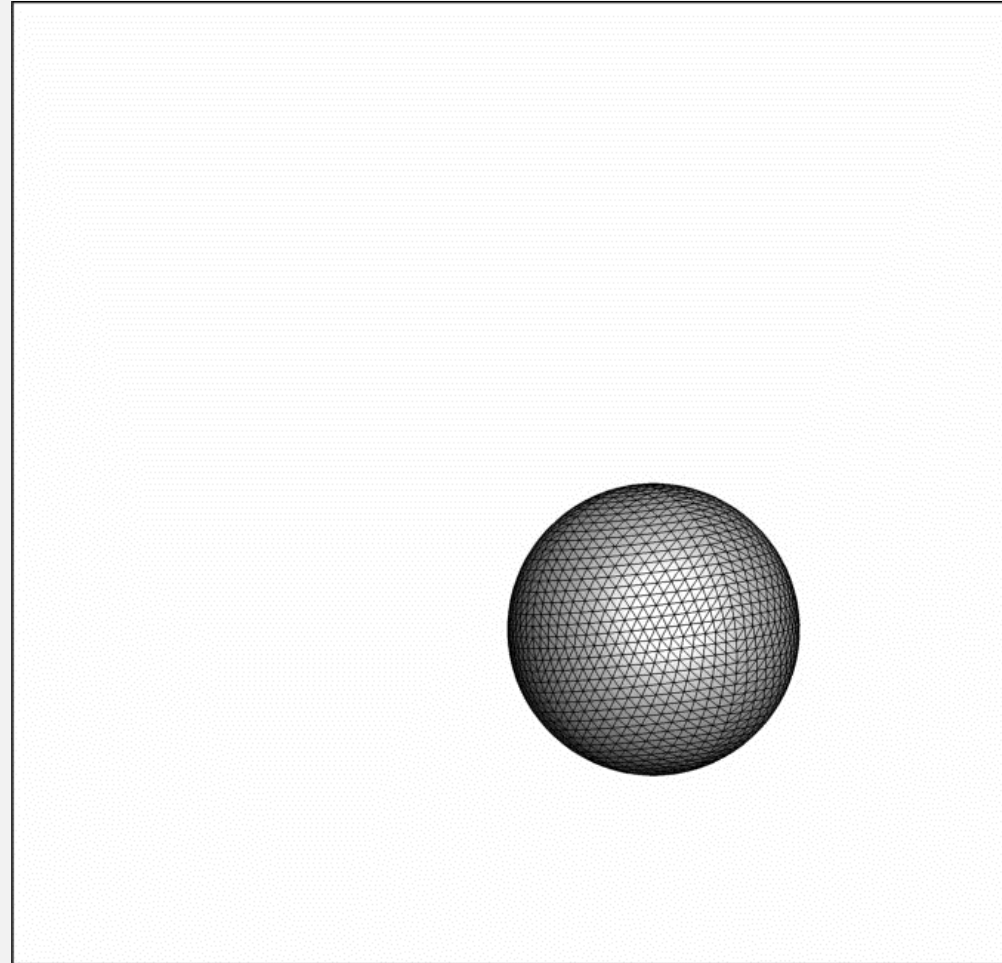


Dr. Amani's research group

Group Research/Industrial Projects

□ Multiphase flows

- ✓ DNS of droplets using Front Tracking Method (FTM) ►

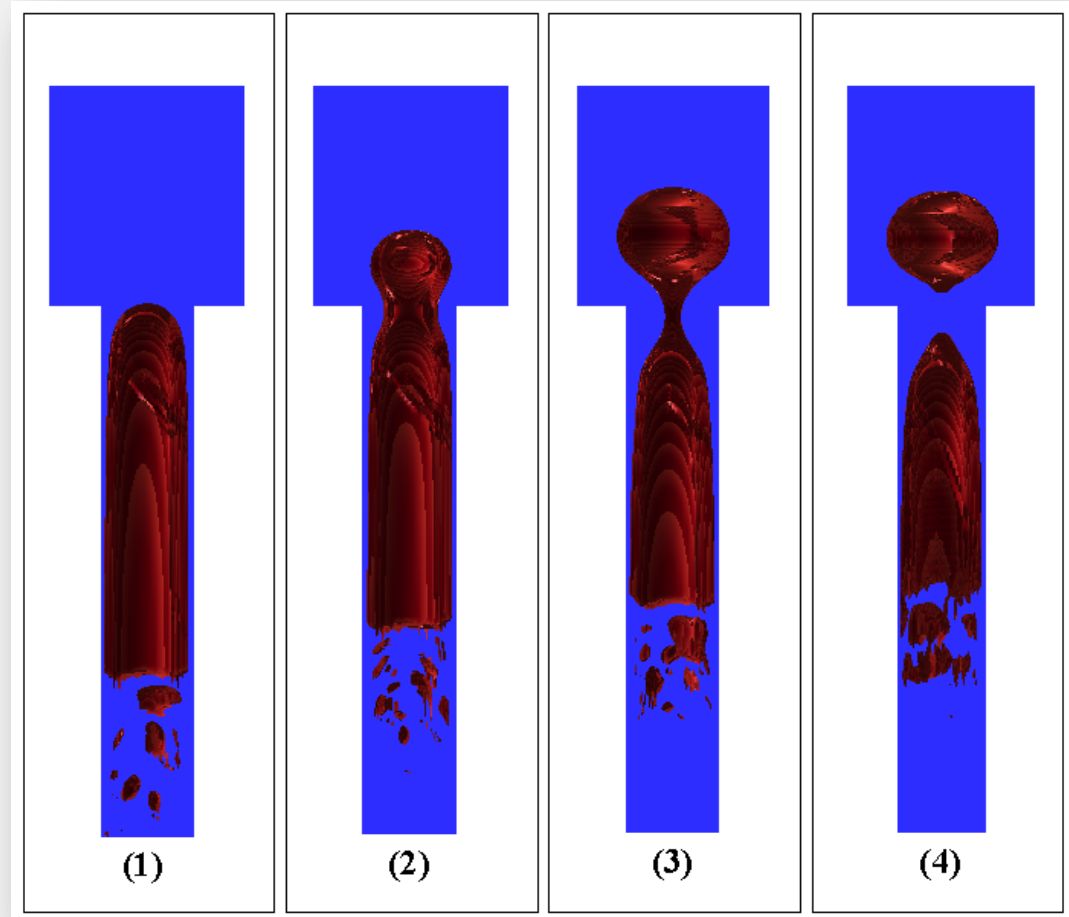


Dr. Amani's research group

Group Research/Industrial Projects

□ Multiphase flows

- ✓ DNS of droplets and bubbles using Volume of Fluid (VOF) ►

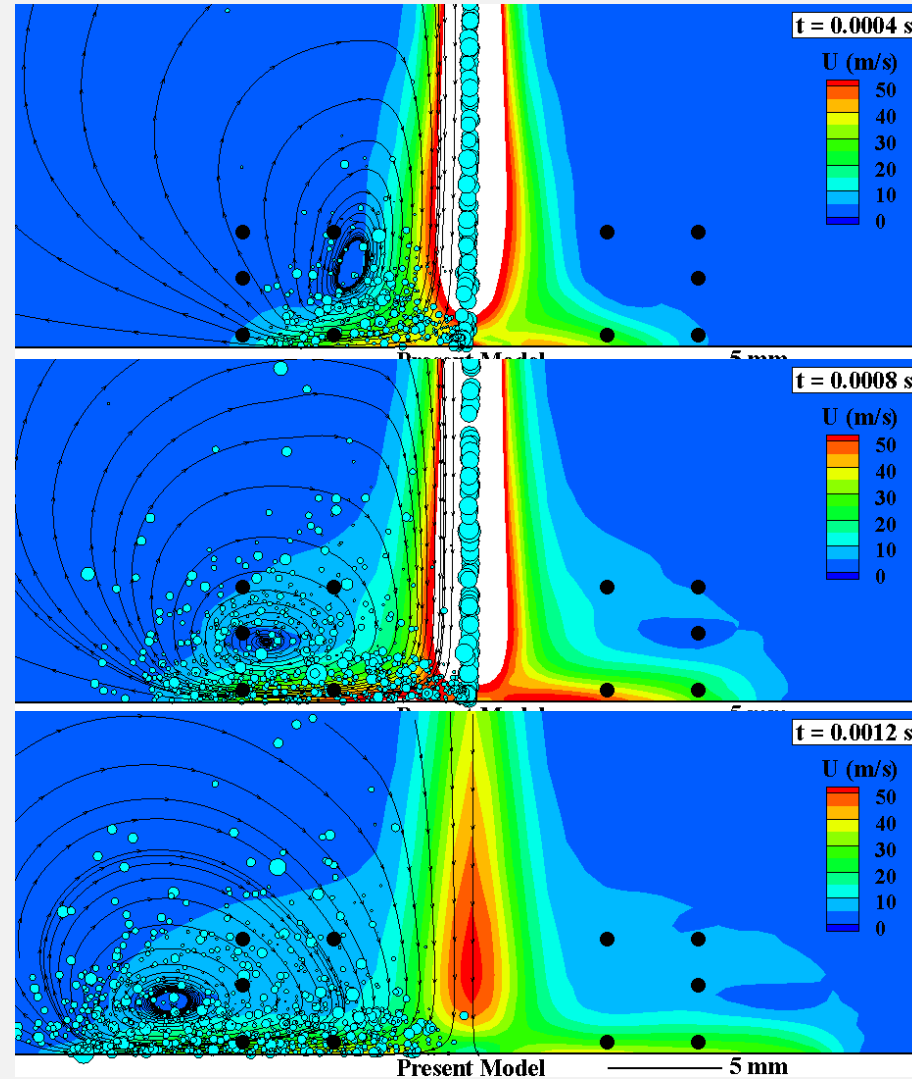


Dr. Amani's research group

Group Research/Industrial Projects

□ Turbulent multiphase flows

✓ Spray-wall interaction ►

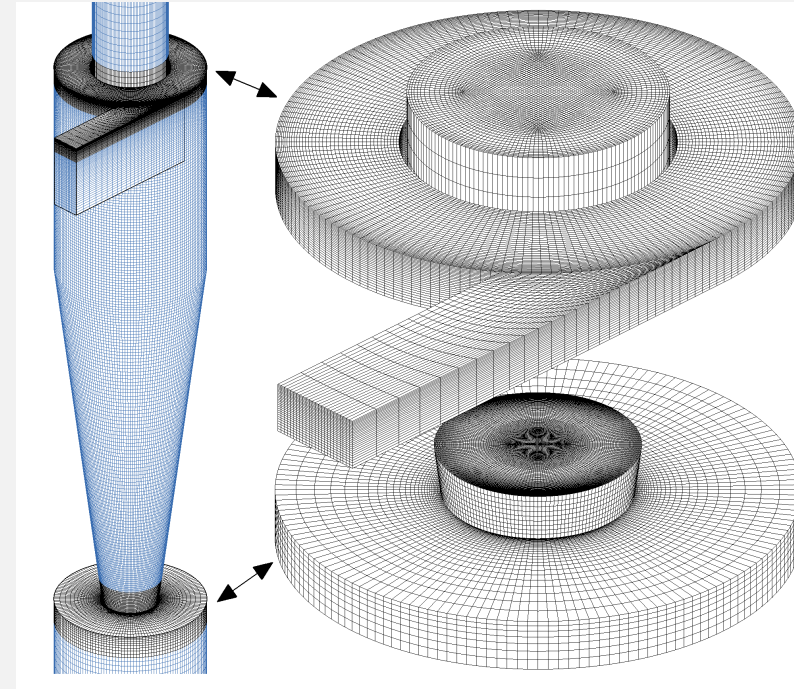
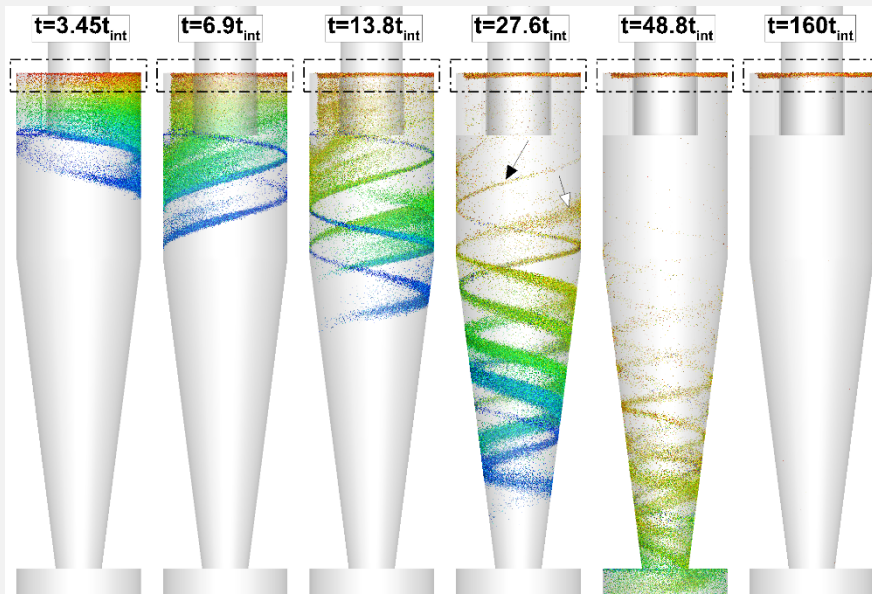


Dr. Amani's research group

Group Research/Industrial Projects

□ Turbulent multiphase flows

✓ Cyclone separators ▼►



Dr. Amani's research group

Group Research/Industrial Projects

□ Ongoing research projects

- Hydrodynamic cavitation in microfluidic bioengineering systems using hybrid VOF-LPT method
- Microcapsule drug targeting using front tracking method
- ...

Group Contact Information

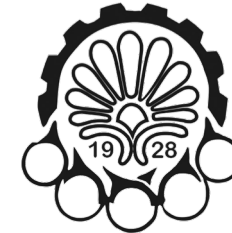
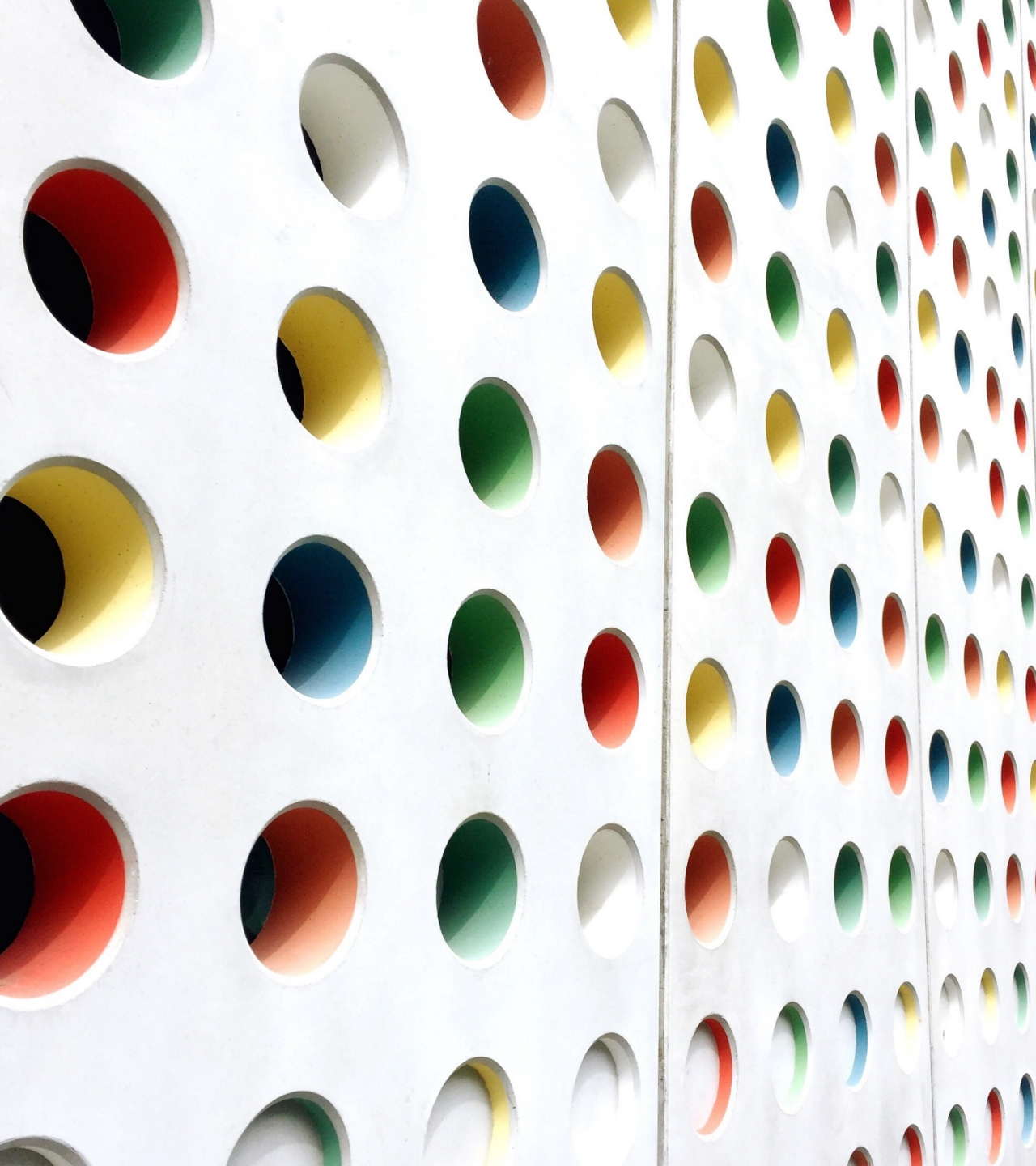
Dr. Amani's research group



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Biopolymer research group

Shadab Bagheri

April 2021

Research Group CV

Due to the increasing need of universities and research centers to increase the productivity and enhance the research capacity of faculty members and researchers, the biopolymer laboratory was established at Polymer Engineering Department of Amirkabir University of Technology in 1994. This laboratory is founded Prof. Hamid Mirzadeh.

Members:

Academic staff:

Prof Hamid Mirzadeh

Dr Shadab Bagheri

Lab manager:

Shaghayegh Samani



Research Group Interest

Nano targeting cancer therapy

Prof Hamid Mirzadeh, Dr Shadab Bagheri, Ehsan Avazverdi, Nafiseh Olov, Maryam Nourmohammadi

Hydrogels and Injectable Systems for Tissue Engineering

Prof Hamid Mirzadeh, Dr Shadab Bagheri, Reyhaneh Kalanaki, Mohammad Ghorbanzadeh, Emad Dehghani, Yasaman Nazani, Maryam FahimiKabir, Hosniyeh Yousefi

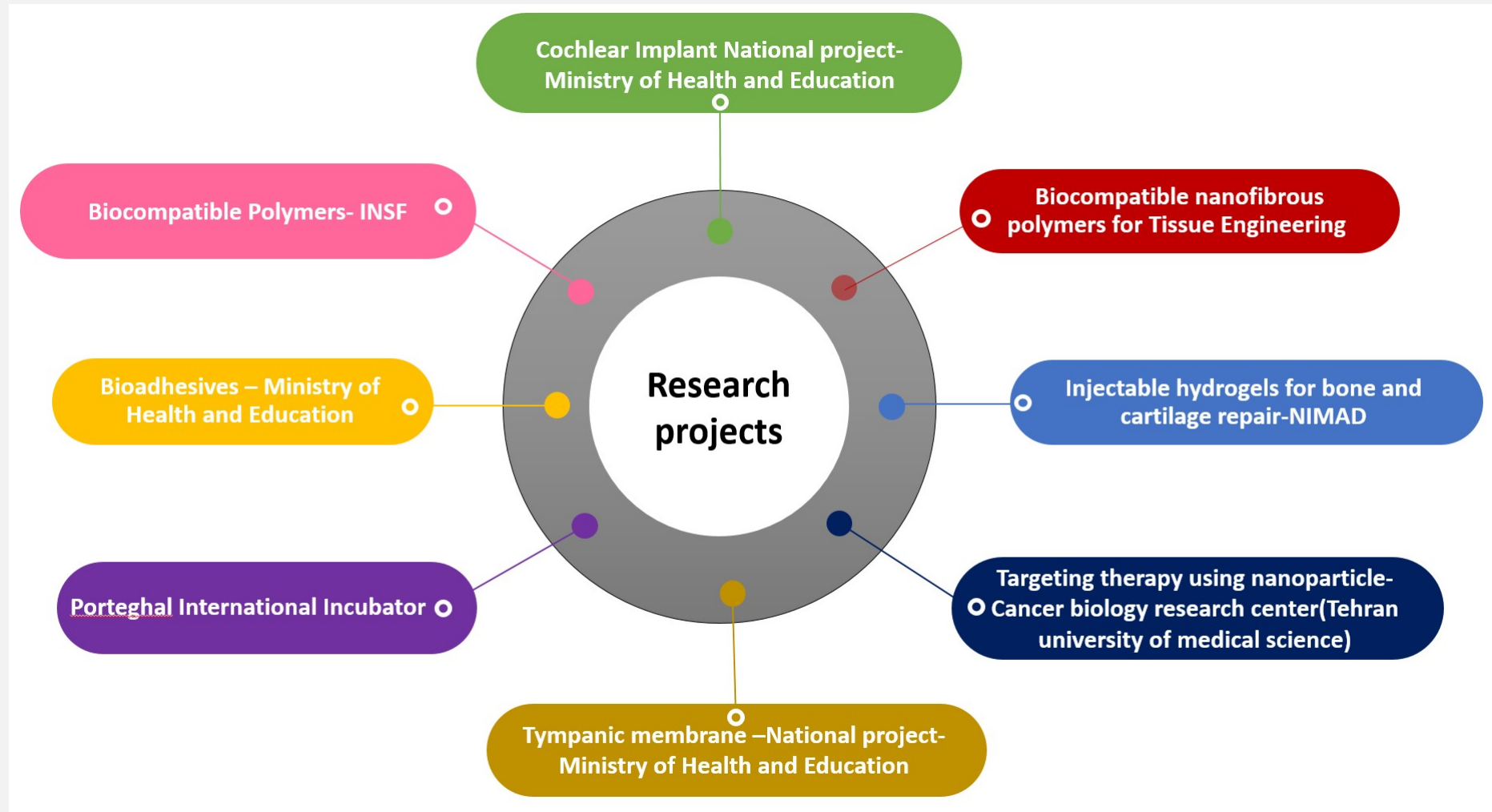
Electrospun nanofibers for biomedical applications

Prof Hamid Mirzadeh, Dr Shadab Bagheri, Niloofar Delkhosh , Fatemeh Fathi, Negin Karimi, Maryam Shateri Hosseinpour, Saeedeh Moradi

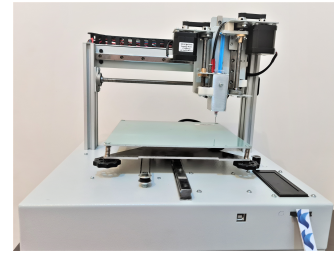
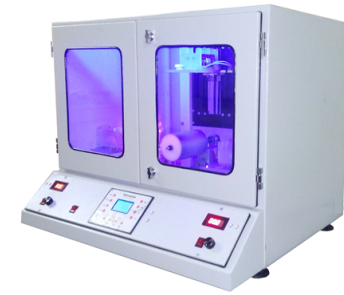
3D printing and microfluidic for tissue engineering and tissue modeling applications

Dr Shadab Bagheri , Ahmadreza Moradi , Fatemeh Hosseini , Taherh Taghavi, Sobhan Daghigh, Pouria Naeb Pashaie, Naem Janat-Sharifi, Meysam Karimi

Group Research/Industrial Projects



Group Supervised Labs



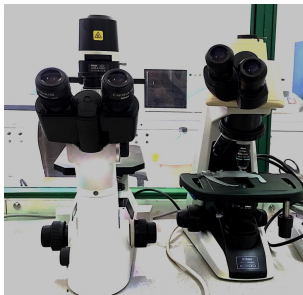
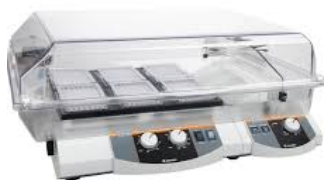
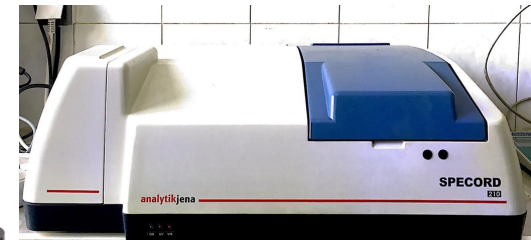
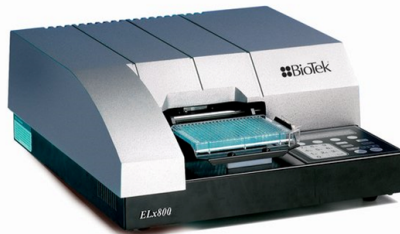
General and
synthesis lab

Biofabrication
lab

Main Labs of
Biopolymer research
group

in vitro and cell
culture lab

Analytical lab



Group Contact Information

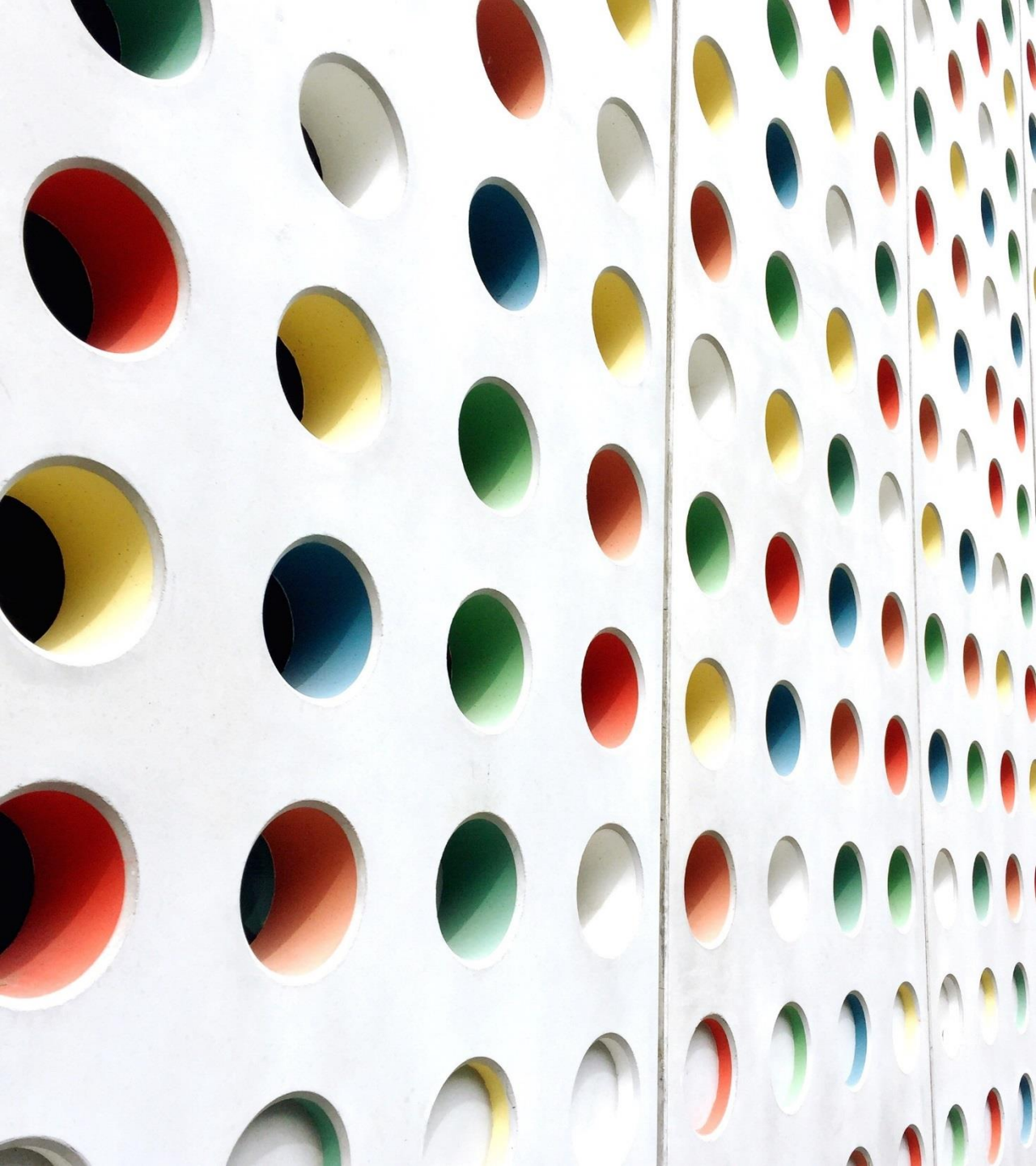
For more information please contact:

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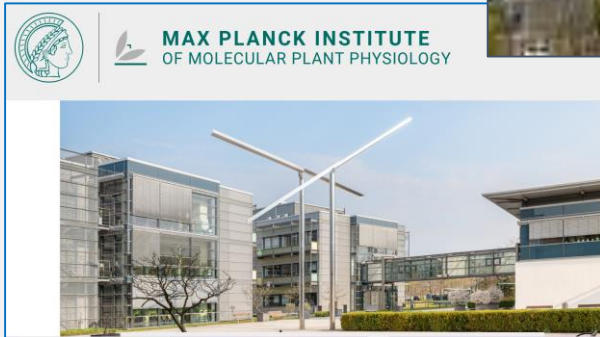
April 2021

Research Group CV

Head: Dr. Masoumeh Emadpour (PhD in plant molecular Biotechnology)

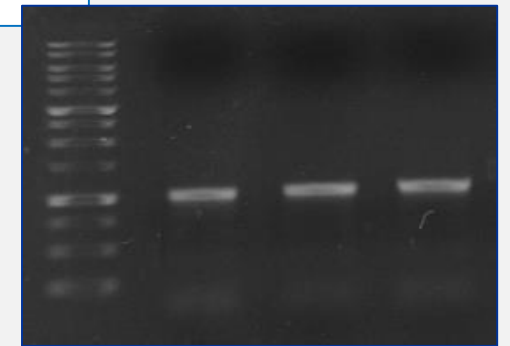
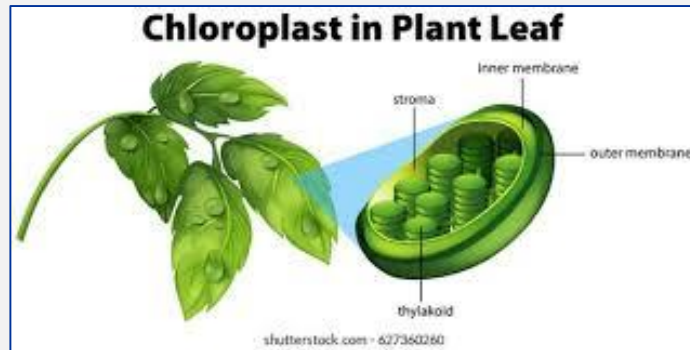
Education and Academic Achievements:

- 2017-current** Assistant professor at Tarbiat Modares University, Department of Agricultural biotechnology, Tehran, Iran
- 2016-2017** Postdoctoral research fellowship from Bayer Science and Education Foundation in Germany to conduct a research project in Iran. Title of the project: Construction of plasmids for inducible expression of transgenes in chloroplast of microalga (*Chlamydonas reinhardtii*), Karaj, Iran.
- 2014-2015** Postdoctoral research fellow, Title of project: 'Development of tools for inducible production of foreign proteins in chloroplast of microalga (*Chlamydonas reinhardtii*)', **Max-Planck institute of molecular plant physiology, Potsdam, Germany.**
- 2010-2014** PhD in molecular biotechnology, Title of thesis: 'Development of tools for inducible gene expression in chloroplasts', **Max-Planck institute of molecular plant physiology/ University of Potsdam, Germany. Grade: very good**
- 2003-2005** MSc. in Agricultural biotechnology. Title of thesis: 'Genetic variation and polymorphism using PCR technique in some cultivars of Iranian roses', Imam Khomeini International University, Qazvin, Iran. **PGA: 19.49 (out of 20:00)**
- 1999-2002** BSc. Agricultural engineering- agronomy and plant breeding, University of Bu-Ali Sina, Hamedan, Iran. **PGA: 16.72 (out of 20:00)**
- 1996-1999** Persian High School Diploma, Haj Taghavinejad High school, Arak, Iran. **PGA: 19.49 (out of 20:00)**



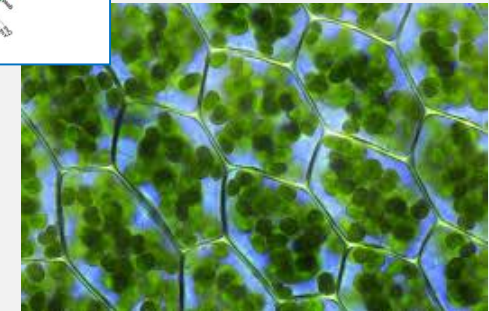
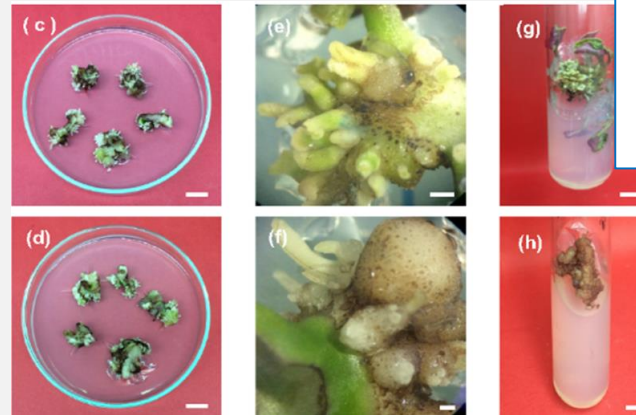
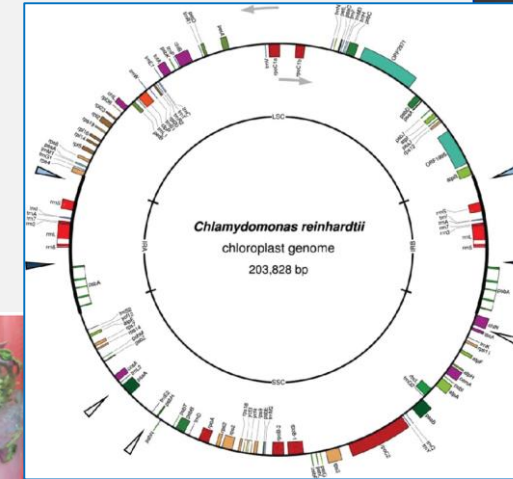
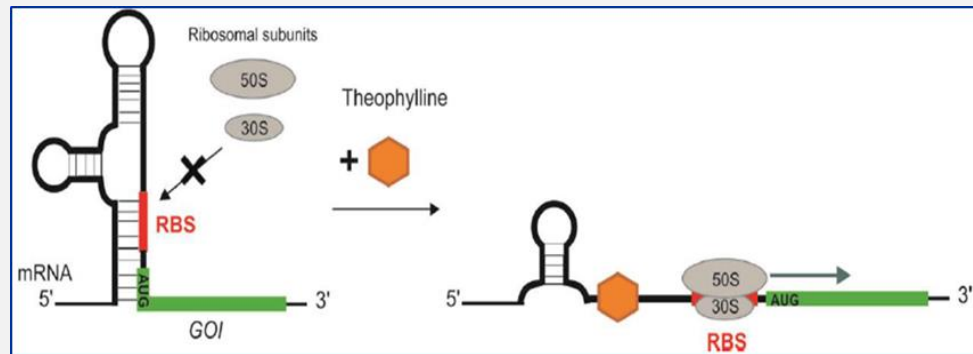
Research Group Interest

- Plant molecular biology; chloroplast biotechnology
- Plant tissue culture and micro propagation



Group Research/Industrial Projects

- Inducible expression of foreign proteins in chloroplast of microalga
- *In vitro* Direct Regeneration in *Cyclamen persicum* Mill.
- Production of virus-free almond plants by *in vitro* thermotherapy
- RNAi-derived transgenic potato lines for resistance to potato virus Y



Group Supervised Labs

Plant Molecular Biotechnology Lab. (Tarbiat Modares University, Tehran, Iran)



Group Contact Information

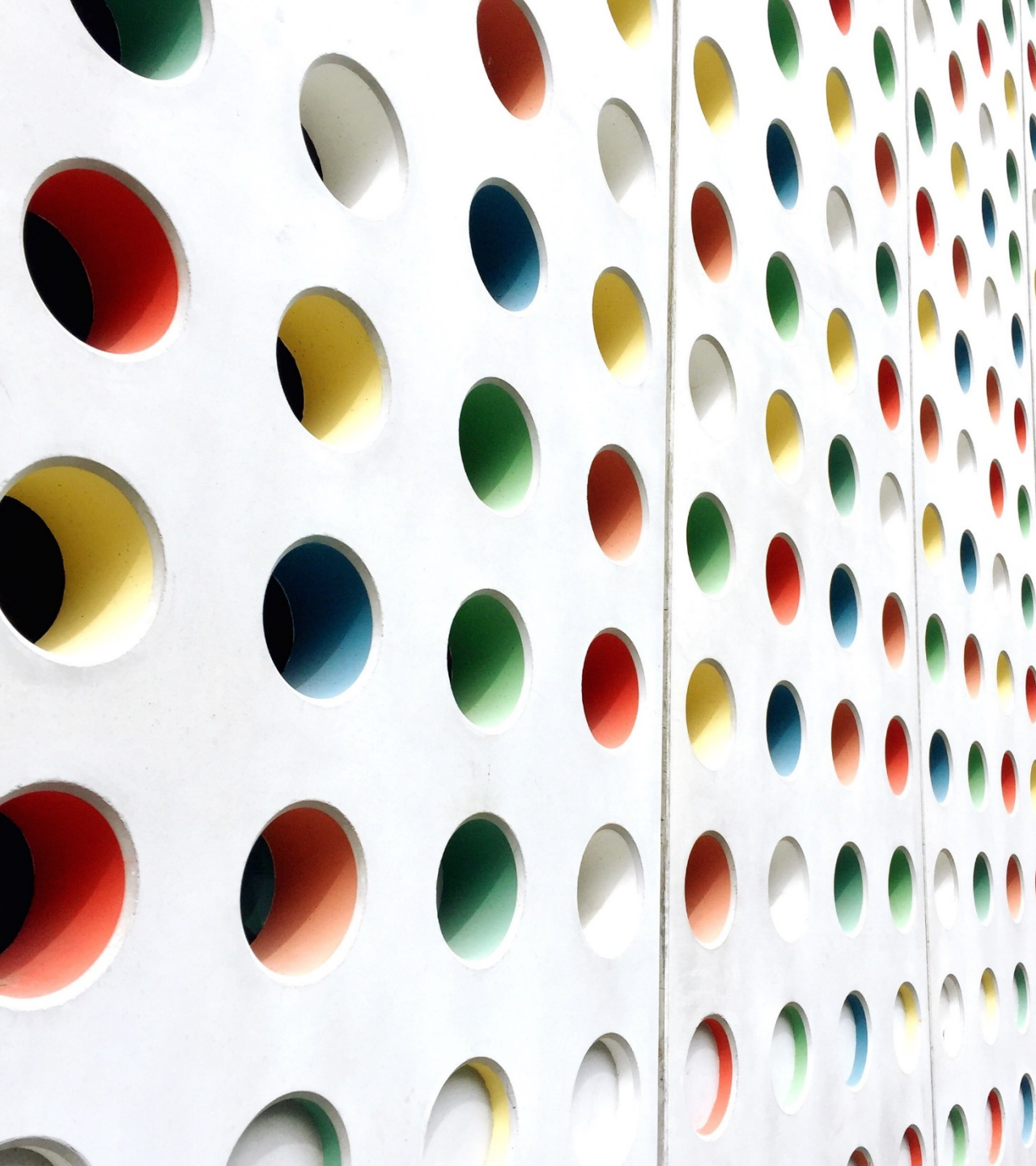
Dr. Masoumeh Emadpour

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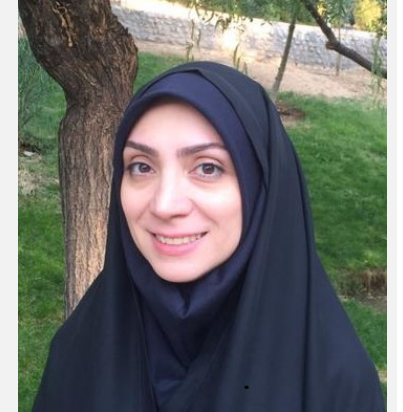
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Research Group CV

Dr. Malikeh Nabaei
Assistant Professor
Biomedical Engineering Department
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Dr. Ali Farnoud
Senior Scientist, postdoctoral researcher
Institute of Computational Biology,
Institute of Lung Biology and Disease
(German Lung Research Center)
Helmholtz Zentrum München (HMGU)
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Research Group CV

Dr. Mousa Mohammadpour fard
Associate Professor
Chemical and Petroleum Engineering
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Dr. Pramod Kumar
Senior Scientist, postdoctoral researcher
Institute of Lung Biology and Disease (German Lung Research Center)
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Research Group CV

Prof. Dr. med. Ingo Baumann
Professor, Vice Chairman, Chief Senior Physician
Department of Otolaryngology
Heidelberg University Hospital
Ingo.Baumann@med.uni-heidelberg.de



Research Group Interest

- **Aerosol transport in respiratory system**
- Multiphase flow modeling
- Targeted delivery of nanomedicine/nanoparticles
- Drug delivery in lung
- Nose to brain drug delivery
- Maxillary sinuses aerosol delivery
- 3D whole lung imaging (ex vivo)
- Confocal imaging
- ex vivo lung slice fluorescence imaging
- Efficacy testing of new formulations

Group Research/Industrial Projects

- Amirkabir and Tabriz universities have collaborations with the German research partners at HMGU.
- Dr. Farnoud and Prof. Dr. Nabaei have collaborations on respiratory aerosol delivery models using the mice whole lung images provided by Dr. Otmar Schmid's group (Group of Pulmonary Aerosol Delivery at HMGU).
- Currently a PhD candidate and a master student from Amirkabir university are collaborating with HMGU.
- Dr. Farnoud and Prof. Dr. Mohammadpour fard have collaborations on drug delivery into human lung using pMDI devices and they have an article under revision in the European Journal of Pharmaceutical Sciences.
- Prof. Dr. Med. Baumann has collaboration with HMGU (Dr. Farnoud) on nasal drug delivery with focus on maxillary aerosol delivery.

Group Supervised Labs

- Biological fluid dynamic research laboratory
Biomedical engineering department
Amirkabir university of technology
- Institute of Computational Biology, Computational Biomedicine Lab
Helmholtz Zentrum München
- Institute of Lung Biology and Medicine, German Lung Research Center
Helmholtz Zentrum München
- Department of Otolaryngology Heidelberg University Hospital

Group Contact Information

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Prof. Dr. med. Ingo Baumann

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