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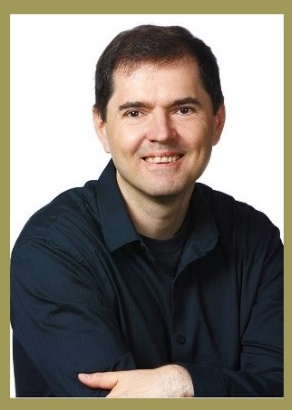
DIPARTIMENTO
DI INGEGNERIA
CIVILE E AMBIENTALE

CIVIL AND ENVIRONMENTAL ENGINEERING

INTERNATIONAL DOCTORAL PROGRAM 2022-2023



Sergei Manzhos is Associate Professor at the School of Chemistry and Chemical Technology, Tokyo Institute of Technology. He holds a master's degree in radio physics & electronics from Kharkiv National University, Ukraine (1999) and a PhD in chemistry from Queen's University of Montreal, Canada (2005).
He was NSERC Postdoctoral Fellow at the University of Montreal, Canada in 2005-2008. In 2008-2012 he was Project Assistent Professor at the University of Tokyo, and in 2012-2019 Assistant Professor and group leader at the Department of Mechanical Engineering, National University of Singapore. He was Associate Professor at the Centre Energie Materiéux Télécommunications, Institut National de la Recherche Scientifique of the University of Québec before joining Ihara-Manzhos lab at the Tokyo Insitute of Technology in 2021.
Prof. Manzhos's research interests include modeling of materials for electrochemical power sources, computational spectroscopy, and machine learning and method development for these.

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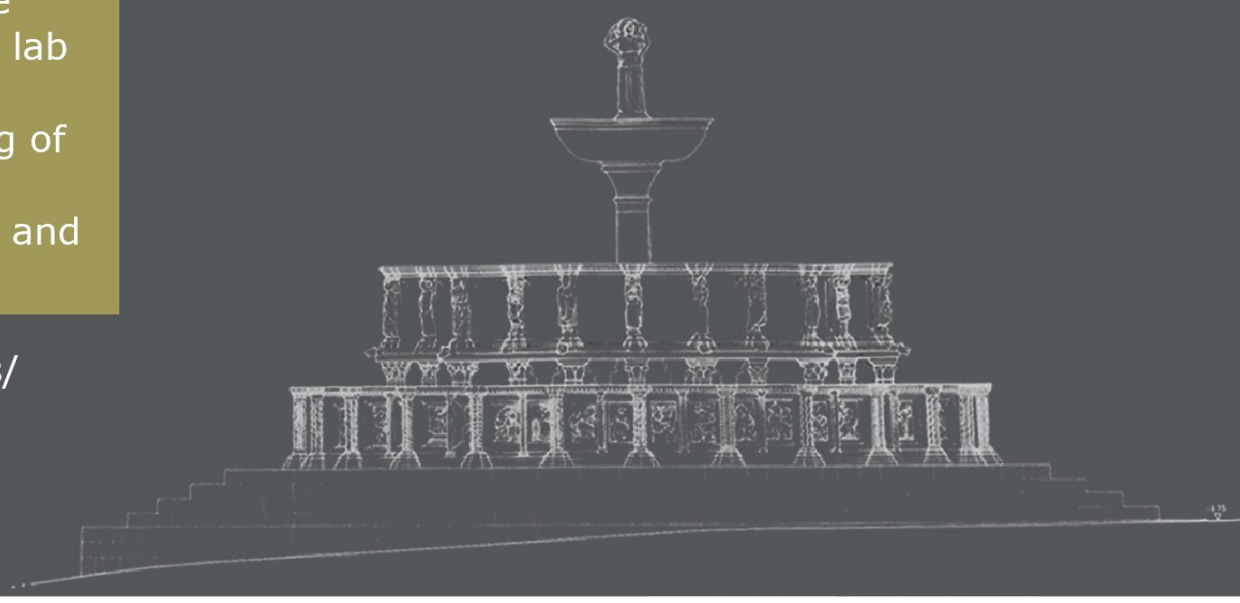
FUNCTIONAL MATERIALS & DEVICES

Course Description
Functional materials belong to a special category that is different from traditional structural materials.
This category of materials provides special functionalities and is able to convert energy from one form to another.
They can be found naturally and can also be engineered based on different requirements.
This course covers principles of functional materials in inorganic and organic materials, and metals.
The course will also provide basics on applications of some functional materials in specific types of devices.

The following topics will be covered:
- Atomistic materials buildup, crystal structures and systems.
-Major characterization techniques: XRD, XPS, IR, CV.
-Light-matter interaction (absorption, luminescence, etc) and relevant electronic structure. Optical and photonic materials: fundamentals of physics; materials for optical and photonic applications (fibers, solar cells, LED).
-Electrochemcal properties & their use in electrochemical batteries.
-Magnetism (types of magnetic response, hysteresis, etc) and its uses.

Course Schedule
Day 1, May 9th, Tue: 10:00-13:00 Auletta
Day 2, May 10th, Wed: 10:00-13:00 Auletta
Day 3, May 11th, Thurs: 10:00-13:00 Auletta
Day 4, May 15th, Mon: 10:00-13:00 Auletta
Day 5, May 16th, Tue: 10:00-13:00 Auletta
Day 6, May 17th, Wed: 10:00-13:00 Auletta

Location
Campus of Engeneering of University of Perugia
Latitude: 43.118177 Longitude: 12.357942



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