



Materials Research Laboratory

University of Nova Gorica, Slovenia



XI. Open Seminar Day of Materials Research Laboratory

Day: Friday, 30. 9. 2022

Venue: University Center Ajdovščina, Auditorium

Program

9:30 Intro: *Matjaž Valant*

9:40 – 10:10 **Invited talk: *Miran Čeh*** – SEM and TEM investigations of materials at the Centre for Electron Microscopy and Microanalysis (CEMM)

Session I - Chairman: *Artem Badasyan*

10:10 – 10:30 ***Mattia Fanetti*** – Latest news on metal/topological-insulator interfaces: the Pt/Bi₂Se₃ case

10:30 – 10:50 ***Zipporah Benher*** – Quasi-binary Bi₂Se₃-CdSe system: A new ternary compound and self-assembled topological-insulator/trivial-insulator heterostructures

10:50 – 11:10 ***Anja Siher*** – Supercapacitors based on the cobalt hydroxide

11:10 – 11:30 ***Andraž Mavrič*** – Hydrotalcite derived nanocrystalline CuZnAlMg catalyst system with an amorphous interphase

Coffee break

Session II - Chairman: *Sandra Gardonio*

11:50 – 12:10 ***Saim Emin*** – Growth and characterization of TiO₂ nanotube arrays

12:10 – 12:30 ***Knarik Yeritsyan*** – Helix-coil theory to process experimental data for short polypeptides in solvent

12:30 – 12:50 **Blaž Belec** - Exploitation of Localized Surface Plasmon Resonance for Detection of Nanoparticle's Topological Surface States

12:50 – 13:10 **Andreea Oarga** - Principles of life cycle assessment and their implementation using the example of a single and a comparative case study

13:10 – 13:30 **Matjaž Valant** - Association of ionic species and their influence on electrolyte conductivity - case of FeCl_2

13:40 group photo and lunch

SEM and TEM investigations of materials at the Centre for Electron Microscopy and Microanalysis (CEMM)

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Modern state-of-the-art electron microscopy (EM) techniques are among the most versatile and useful analytical methods for non-destructive morphological, structural and chemical characterization of materials. Both, scanning electron microscopy techniques (SEM) and transmission electron microscopy techniques (TEM), in essence complementary analytical methods, are capable of providing insight into the structure and chemical composition of materials from micrometer range to sub-atomic range. By recent developments of liquid-cell TEM in-situ techniques, the dynamic component of processes in liquids/gases and during electrochemical reactions can be observed as well. The present work will focus on more recent SEM and TEM investigations that were carried out at the Centre for Electron Microscopy and Microanalysis (CEMM) at the Jožef Stefan Institute (JSI). The EM techniques available within the CEMM will be demonstrated with the results of EM investigations performed on various inorganic and organic materials. The CEMM function and strategy will also be commented on.