

Multiwavelength Raman spectroscopy group (MRSG)

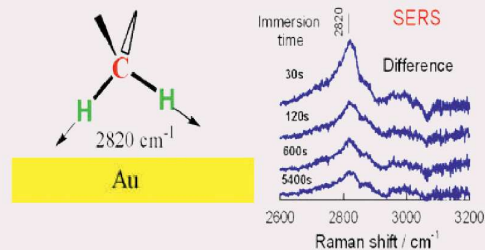
Keywords: Raman spectroscopy; Resonance; Excitation wavelength; Nanomaterials; Electrified interfaces; Functional materials; Carbon; Solar cells; SERS.



Research group activities

Research of the group focuses on several themes related to the development of multiwavelength Raman spectroscopy and molecular level analysis of carbon materials, biomolecules, nanostructures, thin films for Solar elements and studies of the structure of electrochemical interfaces.

The research group closely collaborates with chemists and biochemists from Lithuania, Poland, and Sweden.



Proposal

Structural characterization of nanomaterials and surfaces.

- Multiwavelength Raman spectroscopy of carbon materials (graphene, carbon nanotubes, diamond like carbon films, nanostructured graphite);
- Multiwavelength Raman spectroscopic analysis of components of Solar elements (kesterite, perovskite and others);
- Multiwavelength Raman and infrared spectroscopic characterization of nanostructured hydroxyapatite;
- Surface-enhanced Raman spectroscopic characterization of adsorbed molecules at Au, Ag, and Cu electrodes. In situ studies at controlled electrode potential;
- Shell-isolated nanoparticle-enhanced Raman spectroscopy (SHINERS) characterization of interfaces.

Multiwavelength Raman spectroscopy provides detailed molecular level characterization of materials and processes. Because of dependence of parameters of Raman bands on excitation wavelength (dispersion effect) for carbon materials, resonance Raman spectra of biomolecules and SERS studies of electrified interfaces, new important knowledge on the structure and function of the molecular systems might be extracted.



Meet our team

Prof. Dr. **Gediminas Niaura**, Group leader

Dr. **Valdemaras Aleksa**, Researcher

Jonas Kausteklis, PhD student



Research outcomes

Research group published more than 180 publications in international peer-reviewed journals, which have been cited by other scientists more than 2000 times. The h index of the group leader is 23.



Resources

Several Raman spectrometers provide possibility to record multiwavelength Raman spectra by using excitation radiation from UV (325 nm) to NIR (1064 nm) spectral region. We are able to conduct in-situ spectroelectrochemical Raman studies in moving electrochemical cell at controlled electrode potential by using Ag, Au or Cu electrodes.



Contacts

Prof. Dr. Gediminas Niaura
Chemical Physics Institute

E-mail: gediminas.niaura@ftmc.lt

Phone: +370 5 264 9214

More about the institute: <http://www.chfi.ff.vu.lt/en/>

**Department for Research
and Innovation**

Phone: +370 5 268 7006

E-mail: innovations@mid.vu.lt

More information: <http://www.innovations.vu.lt>