

## Doctoral supervisors

### Prof. Dr. Simion AȘTILEAN

#### Research interests

- Development of new nano-systems based on plasmonic and hybrid nanoparticles incorporating specific biomolecules, as anti-cancer drugs and molecular reporters for applications in nanomedicine and, particularly, in cancer nano-therapy (targeted cancer nano-chemotherapy, nano-photo-dynamic therapy, plasmonic hyperthermia, multimodal therapy, molecular imaging and diagnostic, etc.)
- Development of nanostructured metallic films or colloidal nanoparticles as effective substrates for enhanced detection and identification of various (bio)molecules and biomarkers via optical spectroscopy including Raman / SERS, localized surface plasmon resonance LSPR-UV-VIS, steady-state and time-resolved fluorescence, metal-enhanced fluorescence (MEF), etc.
- Implementation of reliable and less expensive nanofabrication and nano-structuration procedures (colloidal self-assembling, nanosphere lithography, thin film deposition, chemical synthesis and bio-synthesis of plasmonic nanoparticles, Reactive-ion etching (RIE) processing etc.

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### Prof. Dr. Gheorghe-Lucian BAIA

#### Research interests

- Materials for tissue engineering applications
- Carbonaceous based structures for technological applications
- Materials with controllable structure and morphology for environmental applications

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### Prof. Dr. Monica-Maria BAIA

#### Research interests

- Vibrational investigations of pharmaceuticals, photocatalysts, carbon-based nanomaterials, nanostructures for environmental and biomedical applications by Raman and IR absorption spectroscopy, as well as SERS

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### Assoc. Prof. Dr. Zoltan BALINT

#### Research interests

- Automatic solutions for medical image analysis
- Personalized, 3D printed supports for radiation therapy by using radioresistant, radiotransparent materials with a 3D image acquisition and processing approach

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### CS II Dr. Diana-Ancuța BENEĂ

#### Research interests

- Ab initio methods for band structure calculations in solids and nanomaterials
- Ab initio methods for description of the magnetic and spectroscopic properties in solids/nanostructured materials (Compton scattering, positron annihilation, XPS spectroscopy)

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### Prof. Dr. Titus Adrian BEU

#### Research interests

- Force fields and molecular dynamics of biopolymers for gene delivery
- Solvation/crystallization of calcites and CO<sub>2</sub> sequestration
- Nanofluidics. Transport through carbon nanotubes and ion channels

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### Assoc. Prof. Dr. Ioan BOTIZ

#### Research interests

- Development of polymeric nanostructures/crystals in thin films by employing the self-assembly/crystallization method; understanding the microstructure-property relationship in polymer films using inclusively the AFM technique
- Fabrication of polymeric surface relief patterns via nanoimprint lithography; generation of multifunctional micro- and nano-structured platforms based on organic, inorganic, insulating, conductive or emissive nanoparticles
- Development on unique home-made equipment for processing of polymer thin films
- Synthesis of carbonic bidimensional nanomaterials (graphene oxide, reduced graphene oxide) in organic solvents
- Delivery of new polymer/fullerenes or polymer/graphene-like composite materials displaying optoelectronic, antimicrobial or thermoconductive properties for applications in photovoltaics, light-emitting diodes, field-effect transistors, automotive, etc.

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### Prof. Dr. Vasile CHIȘ

#### Research interests

- Computational spectroscopy methods for investigating the electronic structure of biomolecules
- Conformational analysis of pharmacologically active compounds and study of ligand-receptor interactions
- Weak intermolecular interactions: the role of dispersion in weakly bound systems
- Adsorption of molecules on surfaces
- Photophysics of biomolecules
- Molecular and electronic structure of radiopharmaceuticals used in nuclear medicine for PET and SPECT imaging

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### Prof. Dr. Grigore DAMIAN

#### Research interests

- Analysis of free radicals from food and drugs sterilized by irradiation
- Applications of RES spectroscopy in biology and medicine

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### Prof. Dr. Leontin DAVID

#### Research interests

- Spectroscopic and magnetic investigation of biomolecular structures

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## Doctoral supervisors

### Prof. Dr. Iosif Grigore DEAC

#### Research interests

- Spintronics: Materials, physics and devices
- Electron correlation effects in oxides
- Magnetocalorics
- Multiferroics
- Ordered magnetic nanostructures

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### Prof. Dr. Radu FECHETE

#### Research interests

- Development of new advanced physical methods, experimental (NMR, FT-IR, UV-VIS) and numerical for material characterization and production of biomaterials by electrospinning

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### CS. I Dr. Monica-Olivia FOCŞAN

#### Research interests

- Nano(bio)photonics and plasmonics with emphasis on synthesis, fabrication, characterization and biological applications of gold nanoparticles with different morphologies, and numerous types of tunable metallic nanostructures
- Design of multifunctional plasmonic nanoparticles or integrated microfluidic devices in different configurations, in view of biosensing, plasmon-induced photothermal therapy, bioimaging applications, as well as their controlled coupling with various emitters to extend the application fields of the fabricated hybrid plasmonic nanostructures

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### Prof. Dr. Ioan GROSU

#### Research interests

- Condensed Matter Theory

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### Prof. Dr. Nicolae LEOPOLD

#### Research interests

- Processes at the interface of plasmonic nanoparticles
- Clinical spectroscopy

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### CS. I Dr. Dana-Alina MAGDAŞ

#### Research interests

- Applications of Isotope Ratio Mass Spectrometry (IRMS) in food and beverages authentication
- Development of new food and beverage recognition models based on acknowledged and/or emerging analytical approaches
- Metabolomics based on the association between spectroscopic methods and supervised statistical methods/artificial intelligence
- Detection and quantification of emerging pollutants in environmental matrices and their propagation along the food chain

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### Prof. Dr. Ladislau NAGY

#### Research interests

- The theory of atomic collisions
- The study of ionization of atoms and molecules by charged particle impact
- Interactions of atoms and molecules with strong laser fields
- The interference of electron waves

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### Prof. Dr. Zoltán NÉDA

#### Research interests

- Statistical and computational physics

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### Prof. Dr. Petru PĂŞCUŢĂ

#### Research interests

- Fabrication and characterization of physical and structural properties of some new glasses and glass ceramics doped with 3d and 4f ions and co-doped with metallic nanoparticles (Au, Ag, Cu, Fe, Co, etc.) with possible application in electronics, telecommunications or medicine

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### Prof. Dr. Simona PÎNZARU

#### Research interests

- Translational biomolecular research: using Raman spectroscopy methods (NIR-Raman, SERS, Raman, or their combinations) and techniques in conjunction with other molecular and solid state physics methods to develop new innovative products and services in:
- Bioeconomy and circular economy: - New added value by-products from the exploitation of aquatic resources (blue bioeconomy)
- Nanostructured three-dimensional biomaterials of natural origin: structure, characterization and new applications for their innovative reuse and waste reduction
- Addressing issues still unsolved for a sustainable environment (ultrasensitive molecular detection, control, molecular monitoring, biotoxins, biomolecules from reusable materials)
- Plastisphere (life forms on plastic, biofilms, cyanobacteria, cyanotoxins, plastic-microorganisms interface)
- Nanoscience solutions to problems still unsolved in diagnostics and medical therapy; ultrasensitive molecular detection based on optical techniques (SERS, Raman resonance, electronics absorption)
- Nano-bio interface: interaction of nanomaterials with micro- and macroorganisms; nano risk
- Applied SERS: detection, molecular recognition, molecular monitoring of compounds of interest for various economic domains: pharmaceutical and cosmetics: (nano) formulations; polymorphism, molecular interactions), food sector (additives, pigments, forbidden substances, toxins, natural extracts), sustainable environment, health care

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## Doctoral supervisors

### Prof. Dr. Viorel POP

#### Research interests

- *New hard magnetic phases based on 3d transition metals or rare earths metals; Nanostructured/nanocrystalline magnetic phases coupled by interphase exchange interactions*

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### Prof. Dr. Coriolan TIUȘAN

#### Research interests

- *Nanomagnetism*
- *Spintronics*
- *Thin Solid Films*
- *Patterned mesoscopic structures*

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### Prof. Dr. Romulus TETEAN

#### Research interests

- *Core-shell magnetoelectric nanoparticles for biomedical applications*
- *Magnetic properties and magnetocaloric effect on selected transition metals compounds*
- *Electronic and magnetic properties on rare-earths-3d transition metals intermetallic compounds*

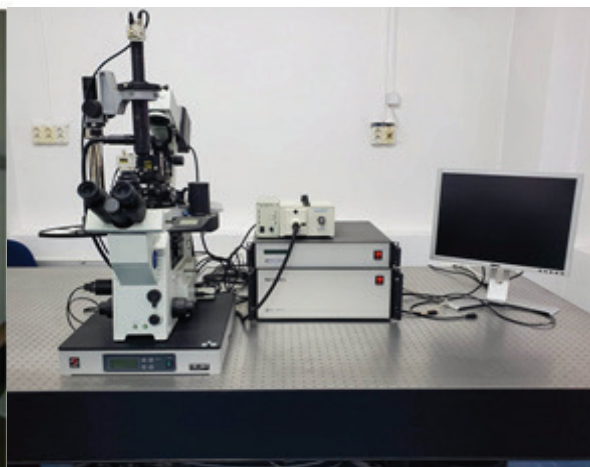
romulus.tetean@ubbcluj.ro; [https://phys.ubbcluj.ro/departamente/cstma/doc/cstma\\_personal.pdf](https://phys.ubbcluj.ro/departamente/cstma/doc/cstma_personal.pdf)

### Prof. Dr. Mihai TODICĂ

#### Research interests

- *Polymers physics and soft condensed matter*

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## CONTACT

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