



PhD position open in: "Development of advanced Nd-Fe-B permanent magnets for use in e-mobility"

Organization:

Institut Jožef Stefan, Jamova 39, Ljubljana – Department for nanostructured materials, Ljubljana, Slovenija, nano.ijs.si

Responsible persons:

Prof. Kristina Žužek Rožman – supervisor, e-naslov: tina.zuzek@ijs.si

Dr. Tomaž Tomše – co-supervisor, e-naslov: tomaz.tomse@ijs.si

Short description of the topic:

E-mobility is becoming an increasingly important part of new green technologies that will enable a long-term transition to a sustainable society, with a lower carbon footprint and a focus on the circular economy. Permanent magnets of the Nd-Fe-B type are an important component of energy-efficient electric motors and generators (wind turbines). The energy balance of such devices depends on the chemical composition and structure of the magnets, and the process of their manufacture plays an important role. The doctoral research will focus on the development of a new technique for rapid consolidation of optimized magnetic powders, in order to achieve the highest magnetic properties. An innovative approach will in the long run enable lower consumption of critical raw materials and better control of diffusion processes during sintering and phase composition of magnets. Part of the research will include the study of the mechanisms of magnetization loss using modern analytical techniques (electron microscopy, X-ray analysis, atomic/magnetic force microscopy).

Opportunities for career development:

- The PhD coincides with the guidelines of the European Commission and is linked to several existing European projects, with an emphasis on lower consumption of critical raw materials, the circular economy and the decarbonisation of society.
- We offer a stimulating work environment and modern research infrastructure
- Presentations at conferences at home and abroad and additional training in thematic workshops
- Work in a team of experts from various complementary fields (magnetic materials, sensors, functional ceramics, biomaterials, electron microscopy,...)
- Duration: 3-4 years, Doctoral studies at the Jožef Stefan International Postgraduate School, <https://www.mps.si/>

Required conditions for application:

- Completed study program of the second level (master's degree) or old university program in science or technology (e.g. chemistry, physics, engineering, materials...)
- Knowledge of English Language

When to start?

After the completion of the application procedure and the selection of the candidate

How to apply?

Please send your CV and the required documentation (MSc degree) to the e-mail address: tina.zuzek@ijs.si and tomaz.tomse@ijs.si