H2020 MSCA - ITN - 2017 - 766007

Magnetics and Microhydrodynamics, from guided transport to delivery

ESR 9 Innovative development and manufacturing of magnet assemblies

Research project	Although NdFeB magnets have excellent magnetic properties, such as the highest energy product values (> 500 kJ m-3), their corrosion resistance to many environments is poor[1]. To fully exploit the capabilities of NdFeB magnets in demanding environments such as those envisioned in MaMi requires improved durability and corrosion resistance of finished magnet assembles. High performance under a wide range of conditions is required, including corrosive aqueous environments, exposure to oil-based fluids, all at temperatures ranging from -40°C to 140°C, with or without additional external magnetic fields. Furthermore, accelerated aging will be performed under high temperatures and pressures in autoclaves. The focus will be to establish the constraints implied by magnetic microfluidic circuitry on the design and stability of the sintered or bonded magnets used in the magnetic circuit design. Key issues include i) the chemical stability of the magnets in contact with the magnet sheath (special ferrofluid or paramagnetic oil) surrounding an aqueous antitube (expertise of JSI partner) and ii) the manufacturability of the magnetic microfluidic platforms in collaboration with CNRS-IPCMS. [1] A. Saliba-Silva et al., Surf. Coatings Technol., **185** (2004), 321–28
Supervisor	Name: Nataša Kovačević e-mail: natasa.kovacevic@kolektor.com, bernarda.ursic@kolektor.com
Host Institution	Kolektor Group d.o.o. Development & Marketing center, Research Department Vojkova ulica 10 • SI-5280 Idrija • Slovenia http://www.kolektor.com/
Required profile	The candidate should hold a MS degree in Chemistry or Physics, with a strong background in Material Science, Magnetism, or Physical Chemistry. Interest for interdisciplinary research is important. Research stays are planned at the Jožef Stefan Institute (Slovenia) and Trinity College Dublin (Ireland). The candidate should not have resided or carried out their main activity (work, studies, etc.) in Slovenia for more than 12 months in the 3 years prior to recruitment date.