



Magnetics and Microhydrodynamics, from guided transport to delivery

ESR 10 Corrosion Protection of Magnetic Materials

Research project	Corrosion protection of materials used in a hostile environment is a prerequisite for safe long-term performance. Magnetic materials used in automobile and other industries (collaboration with Kolektor Group, Slovenia) are subjected to harsh environments including aggressive aqueous and non-aqueous media, and changing temperature and pressure. Once subjected to corrosion attack, the functional performance of these materials is jeopardized. Therefore, additional protection is required to protect the underlying magnetic substrates. Different routes will be employed to find the optimal solution for corrosion protection: including wet chemical (e.g. sol-gel procedures) and gas chemical (e.g. atomic layer deposition) procedures. Based on our experience in coating deposition (Surf. Coat. Technol. 286 (2016) 388-398; J. Sol-Gel. Sci. Technol. https://doi.org/10.1007/s10971-017-4577-7), we will evaluate solutions by testing corrosion resistance in simulated media using electrochemical techniques and standard industrial testing. Characterization of prepared coatings prior and after corrosion attack will be performed using contemporary methods of surface analysis (available at CNRS-IPCMS, France).
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Host Institution	Jožef Stefan Institute Department of Physical and Organic Chemistry, Jamova c. 39, 1000 Ljubljana, Slovenia  Institut "Jožef Stefan" Ljubljana, Slovenija
Required profile	The candidate should hold a MS degree or equivalent (240 ECTS) engineering graduate specialized in Chemistry, Materials Science or similar. Laboratory experience in electrochemistry and material characterization are preferred with interest for interdisciplinary research. Research stays are planned at the Kolektor Group (Slovenia) and University of Latvia (Latvia). The candidate should not reside in Slovenia for more than 12 months in the last 3 years.