PhD in Materials Science and Technology

Research Title: Graphene related materials for functional an protective coatings

Funded by	Position without scholarship

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Context of the research activity	Significant research attention is currently focused on the chemical processing and functional applications of graphene related materials to create nanocomposite thin films, coatings and porous structures. Target applications will be, for example, in the areas of electronics, flexible electronics, supercapacitors, batteries, fuel cells, gas storage, photocatalysis, membranes, anticorrosion and desalination/water purification technologies. Therefore, the development of techniques to deposit Graphene related materials onto different substrates, including films and foams is of utmost interest

Objectives	This PhD program addresses fundamental and applied research for the exploitation of graphene related materials into thin coatings. In particular, gas barrier, thermal protections and EMI shielding are addressed, among other applications The main research objectives of this PhD thesis includes: • Selection, research and development of graphene related materials, aimed at obtaining highly stable, durable and efficient coatings • Research, development and design of coatings embedding graphene related materials. Different deposition strategies are envisaged, including layer by layer coating and supramolecular organizations. Stabilization of and functionalization of graphene related materials will also be addressed

Skills and competencies for the development of the activity	Candidates should have a solid chemistry and/or materials engineering background and strong motivation to learn through advanced research. Expertise in physical chemistry is a plus Practical attitude for the lab activities is also appreciated