BCMaterials, Basque Center on Materials, Applications and Nanostructures, is an autonomous research center launched in June 2012 by Ikerbasque, the Basque Foundation for Science and the University of the Basque Country (UPV/EHU) as a research center for Materials, Applications and Nanostructures. The center is included in the BERC's (Basque Excellence Research Centers) network and its mission is to generate knowledge on the new generation of materials, turning this knowledge into (multi)functional solutions and devices for the benefit of society. The BCMaterials (Basque Center for Materials, Applications & Nanostructures), opens the call to develop the PhD thesis at our center in collaboration with Professors of the University of the Basque Country (UPV/EHU). We will offer three years PhD grants to develop a research project within the five strategic research areas of the center: 1.- Active and smart materials 2.- Advanced functional materials 3.- Functional surfaces and coatings 4.- Micro and nano-devices 5.- Nanostructured materials. Within this frame, the BCMaterials is currently researching an ample diversity of materials, surfaces and devices processing, which fundamental understand and modification allows modifying or combining different physic and chemical properties towards their application in research fields such as Advance Manufacturing, Biomedicine, Energy or Environment.

**Main functions**

Surface science and engineering is all about modifying a surface for advantage and understanding the physico-chemical processes involved. The term 'surface engineering' was identified as "the design of surface and substrate together as a functionally graded system to give a cost-effective performance enhancement of which neither is capable on its own." Specialised treatment of surfaces allows the surface to achieve new functionalities different from those of the bulk. Hard coatings with exceptional resistance to abrasive wear are often employed to extend the lifetime of cutting and molding tools. This type of coatings can now be tailored with more advanced functionalities.

This project seeks the development of well-stablished material surface processing technologies for their implementation as new delivery systems in the broad range of metallic materials (e.g. refractory metals, alloys, steels) used in high value-added (HVA) manufacturing components and systems. The main aim of this project is to select, deposit and test new nanostructured thin film compositions and develop self-sensing and self-repair functionalities related to damage and wear of key engineering materials.

**Requisites**

The position requires a motivated candidate; fluent English and good interpersonal and presentation skills. Previous experience in the fields will be valued. This is a practical project, requiring lab working skills. The project will require visits and possible some work in sponsors labs. A Masters in Materials Science, Materials Engineering or related areas is required. Main duties will include thin film growth and quality assessment, including morphology, crystallinity, and tribological properties assessment by means of electron microscopy, scanning probe microscopy, x-ray diffraction, Raman spectroscopy, nanoindentation, and scratch tests.