

## PhD Student is required to work with nanoGUNE and MONDRAGON UNIVERSITY

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The Machining Laboratory at the Faculty of Engineering of MONDRAGON UNIVERSITY (the leader of the collaboration) has an acknowledged experience on fundamentals of high speed cutting/machining. CIC nanoGUNE Consolider is a Research&Development Center devoted to basic and application research in nanotechnology. Among several high end research facilities it runs an electron microscopy laboratory fully equipped with TEM, SEM and FIB instruments.



The common project funded by Gobierno Vasco is related to the understanding on the mechanics of hard metal cutting at micro/nano scale. More specifically, the main goal is to study the influence that the microstructure of metals has on the machinability of the material. We will apply ion and electron microscopy for studying the micro/nano structure of the materials and the machining process itself in-situ in real time. Extensive mathematical processing of the data as well as theoretical simulation of the impact of the microstructure on cutting process will allow establishing a new know-how in the field.

The role of PhD student within this project is an experimental in-situ study inside SEM and FIB. It will include a morphological characterization of the phases of materials and studying the mechanics of metal cutting at micro/nano scale. The work will necessitate the intensive utilization of optical microscopy, scanning electron microscopy (SEM) and focused ion beam (FIB) systems, so that the candidate will have a unique opportunity to acquire deep knowledge of this instrumentation and techniques. Furthermore the PhD student will be involved in the development and usage of the state of the art in-situ micromechanical devices, so will gain a valuable practical engineering experience.

Responsibilities of the position will include planning and performing of experiments, processing and evaluating of experimental data, preparing publications and reporting the results. The outcome of the work is expected to be in the form of application reports, scientific publications in internationally leading journals and presentations on the conferences. The position requires a Master degree in Engineering, Material Science or Physics, or equivalent. Good oral and written English is a must. Optionally we may consider an outstanding applicant at the stage of preparing a Master thesis (Research option), who will want to devote his Master thesis to this project and continue with us as a PhD student. Beneficially, yet not obligatory are experimental SEM expertise, a good knowledge in metal machining, and proven oral and writing skills.

The PhD position (candidate will be enrolled at MONDRAGON UNIVERSITY, but position will be shared between two institutions) is available for duration of three years as soon as an appropriate candidate is found. Interested applicants should send a letter of application, curriculum vitae, and a name and contact information of a referee to: [a.chuvilin@nanogune.eu](mailto:a.chuvilin@nanogune.eu) and [pjarrazola@mondragon.edu](mailto:pjarrazola@mondragon.edu) with the subject line: "Machining at SEM PhD application".