**MARIE SKŁODOWSKA-CURIE INDIVIDUAL FELLOWSHIPS 2018**

**EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS**

## HOST INSTITUTION

NOVA School of Science and Technology | CEFITEC - Centre of Physics and Technological Research

## RESEARCH GROUP AND URL

CEFITEC - Centre of Physics and Technological Research
https://www.cefitec.fct.unl.pt/

## SUPERVISOR (NAME AND E-MAIL)

Nenad Bundaleski
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## SHORT CV OF THE SUPERVISOR

Nenad Bundaleski graduated in 1996 at the School of Electrical Engineering (Physical Electronics Department), Belgrade University, Serbia. His Master and PhD theses, realized at the Institute of Nuclear Sciences 'Vinča', were related to the building of an experimental setup for studying low energy ion surface scattering and implementation of this technique for surface characterization.
During the postdoc studies in Orsay, France (2007-2009), performed experimental and theoretical study of the fast atom diffraction at grazing incidence, being a novel manifestation of quantum mechanics at that time. Studying interaction of highly charged ions with dielectric surfaces and monitoring their charging dynamics was another experiment accomplished during this specialization.
The next step in professional development was joining Centro de Física e Investigação Tecnológica (CeFiTec) in the frame of the Ciência 2008 program. This work was related to diverse surface science projects. Majority of them were more or less related to secondary electron emission and surface characterization using XPS. Numerous collaborations with different groups in this respect, provided hands on practice in characterisation of various surfaces and nanoparticles, and resulted in gaining extensive experience in XPS analysis. The investigations conducted exclusively in the group and supervised by the candidate were mainly related to the investigation of the secondary electron emission and the surface science of TiO2. This included advising of several Master and PhD students and co-supervising one PhD student.
In 2014 the returned to the 'Vinča' Institute in Belgrade, acquiring the position of Research Professor. After the second arrival in CeFiTec, the candidate continued his previous work, including the supervision of Master students and co-supervising one PhD student at Belgrade University. Currently, his main focus is on the ion induced secondary electron emission, in the frame of the EMPIR project, on the secondary electron yield from graphene, and XPS analysis of nanostructured materials such as graphene, noble metal nanoparticles embedded in dielectrics, etc.

## 5 SELECTED PUBLICATIONS

- N. Bundaleski, H. Khemliche, P. Soulisse, P. Roncin, Grazing incidence diffraction of keV Helium atoms on a Ag(110) surface, Phys. Rev. Lett., 101, 177601, (2008).

- N. Bundaleski, J. Trigueiro, A.G. Silva, A.M.C. Moutinho, O.M.N.D. Teodoro, Influence of the patch field on work function measurements based on the secondary electron emission, J. Appl. Phys. 113, 183720 (2013).

- N. Bundaleski, M. Belhaj, T. Gineste, O.M.N.D. Teodoro, Calculation of the Angular Dependence of the Total Electron Yield, Vacuum, 122 (2015) 255-259.

- N. Bundaleski, I. Radisavljević, J. Trigueiro, A. Tolstoguzov, Z. Rakočević, M. Medić, O.M.N.D. Teodoro, N. Romčević, N. Ivanović, Surface composition of Cd1-xFe(Mn)xTe1-ySey systems exposed to air, Materials Chemistry and Physics, 189 (2017) 35.

- J. Trigueiro, W. Lima, N. Bundaleski, O.M.N.D. Teodoro, XPS spectrometer transmission function optimization by the differential evolution algorithm, J. El. Spec. Rel. Phenom. 222 (2018) 122-132.


## PROJECT TITLE AND DESCRIPTION

***Development of stable low secondary electron yield surfaces***

Ion and electron induced secondary electron emission is a long lasting subject of experimental and theoretical investigations. The research is typically performed on well-defined systems (*e.g.* clean and flat single crystal surfaces). There is, however, a growing interest in secondary electron emission from technical materials motivated by applications in accelerator and space technologies or the low pressure measurement.
The main goal of the project is to develop a method for obtaining chemically inert surfaces which will sustain low ion and electron induced secondary electron yield when exposed to different environments. The electron and ion induced secondary electron yields will be measured before and after the material exposure to different gases (air, water vapour, O2 etc.), as well as to a discharge. Since the electron emission is purely surface effect, the surface modifications materials will be characterized by surface sensitive techniques, such as XPS and TOF-SIMS. In addition, surface modifications will be monitored by following the work function change. Graphene, which is known to be inert and with low secondary electron yield, is one of the candidate materials to be investigated.

SCIENTIFIC REQUIREMENTS
We are looking for a motivated candidate holding a PhD in the area of physics, applied physics, physics engineering and similar. General programming skills (*e.g.* Matlab, Matematica etc.) are requested. The experience in experimental physics, including working with vacuum setups, particle beams and data acquisition (Labview programing) is welcomed.

## SCIENTIFIC AREA WHERE THE PROJECT FITS BEST

Physics (PHY)