

NEXT Invited Scientists

Guest name	Fabrice Piazza
Position	Associate Professor Director of the Nanoscience Research Laboratory
Affiliation	Pontificia Universidad Católica Madre y Maestra Santiago de Los Caballeros Dominican Republic
Host laboratory in NEXT	CEMES Multiscale Multifunctional Materials Group (M3)
NEXT contact (name and e-mail)	Marc Monthioux ; <i>marc.monthioux@cemes.fr</i>
Dates of stay	From October 2 to October 31 (2017)



Brief Biodata

Fabrice Piazza is Associate Professor, founder and Director of the Nanoscience Research Laboratory and founder and leader of the Functional Nanocarbon Materials Group of the Pontificia Universidad Católica Madre y Maestra (PUCMM), Santiago, Dominican Republic. Born in France, Piazza earned his doctoral degree in Physics in 2001 from the University Louis Pasteur, Strasbourg. He initiated his research career studying the synthesis of functional Diamond-like Carbon thin films from a new distributed electron cyclotron resonance plasma process in the CNRS. In 2001 and until 2004, Piazza joined, as Research Associate, the University of Cambridge, England, where he conducted the research and succeeded in providing innovative protective carbon coatings from electron cyclotron wave resonance plasma for next generation of ultra-high storage density optical media. Between spring 2004 and spring 2006, Fabrice was employed as Research Associate at the University of Puerto Rico, Rio Piedras, where he worked on nanocrystalline diamond thin films, diamond crystals, carbon and BCN nanotubes targeting emerging technologies in electronics, bio-nanoprobes and innovative coatings. Piazza and coworkers were the first to successfully report on the low-temperature synthesis of diamond nanocrystals on polymers for electronics and thin film coating applications. In PUCMM, Piazza has led the research on nanocarbon materials, focusing on synthesis and functionalization aspects. These include the improvement of present technology, and the research on new methods and nanomaterials. Prof. Piazza holds two patents and has published more than 32 papers in peer-reviewed journals, which have received more than 570 citations according to Google Scholar. Piazza's SCOPUS Normalized Impact and leadership are 3.33 and 2.24, respectively.

Research project during the visit at NEXT

Descriptive Title Synthesis of "Few-Layer Diamane"

The visit of Fabrice Piazza to CEMES will boost two joint-research projects between CEMES and PUCMM. The first project focuses on the original synthesis of few-atomic-layer of lonsdaleite by a method developed at PUCMM. This material would be the fifth synthetic nanocarbon materials after fullerenes, carbon nanotubes, nanodiamonds and graphene. Beside its scientific importance, it could enable multiple technological advances, for instance in nanoelectronics, quantum computing, and nano-electromechanical systems. The objective, during the 1-month visit of Piazza at CEMES in October 2017, is to evidence the transformation of few-layer graphene into few-layer lonsdaleite, using the carbon characterization expertise (electron microscopy, Raman spectroscopy) available at CEMES. A valuable input will be brought by the modelling capability available at LPCNO.

The second project is aiming at developing carbon nanocones as scanning probes for a variety of near-field methods (2016 NEXT project, "CarboProbe", Marc Monthioux, CEMES), and the visit will provide the opportunity for direct discussion about the project to take place, specifically regarding the work-plan and strategy for the second year of the thesis involved (G. Paredes).