

Graz Advanced School of Science
PHYSICS COLLOQUIUM OF THE UNIVERSITY OF GRAZ AND
THE GRAZ UNIVERSITY OF TECHNOLOGY

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Nano-polarity: an original manifestation of classical electrostatics

Abstract:

Among all compound surfaces, polar surfaces are those which researchers have first tried to avoid as much as they could in the past, but which, eventually, have proved to be the richest in terms of structural and physico-chemical properties. Their stacking of charged atomic layers is responsible for a divergence of the surface energy. Stability can only be recovered if a simple electrostatic condition is fulfilled, but this can be achieved in many different ways: large cell reconstructions, nanometric surface patterning, unusual electronic structure and/or adsorption of charged species, according to the experimental conditions. This richness of behaviours has stimulated important research effort, especially in the oxide community. More recently, it has been proved that polarity has also a sound influence on the stability and properties of nano-objects, such as ultra-thin films, ribbons or nano-islands. For them, however, new stabilization processes are at work, which depend strongly on the dimensionality, size and shape of the objects. This colloquium will review how electrostatic laws manifest themselves in polar nano-oxides at the different length scales and what consequences they have on their physico-chemical properties.

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[2] J. Goniakowski, F. Finocchi, C. Noguera, *Rep. Prog. Phys.* **2008** 71, 016501
[3] J. Goniakowski, C. Noguera, L. Giordano, *Phys. Rev. Lett* **2004** 93, 215702; *ibid* **2007** 98, 205701;
[4] J. Goniakowski, C. Noguera, *Phys. Rev. B* **2011** 83, 115413
[5] C. Noguera J. Goniakowski, *Chem. Rev.* **2012** 113, 4073

Date: Tuesday, June 18, 2019, 17:00
Location: Lecture Hall 05.01, Institute of Physics, University of Graz, Universitaetsplatz 5
16:30 meet the speaker tea, Library of Experimental Physics,
Institute of Physics, Universitaetsplatz 5, 1st floor, room 122
Host: Prof. F. Netzer – Institute of Physics – Surface Science