



Departamento de  
Física de la  
Materia Condensada  
Universidad Zaragoza

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## “Polarization switching kinetics in polycrystalline ferroelectrics”

Ferroelectrics are functional materials which find a lot of applications due to their outstanding electromechanical, electro-optic and thermoelectric properties, such as ultrasonic medical imaging, infrared remote sensing, energy harvesting, micromechanical sensors and actuators and digital information storage. For the latter, a fundamental property of ferroelectrics, the ability to switch a spontaneous polarization when subjected to an electric field, is of particular importance. Macroscopic response of polycrystalline ferroelectrics is still mostly described by the classical Kolmogorov-Avrami-Ishibashi statistical theory of reversed domain nucleation and growth missing many important physical features, such as the orientational disorder of these materials, the feedback by emerging depolarization fields and consecutive switching events. In the talk, an advanced theory of polarization response of polycrystalline ferroelectrics will be presented including analytical results and simulations compared with original experiments on various material systems.

*Yuri Genenko started his scientific carrier in 1982 at the Donetsk Institute for Physics and Engineering of the National Academy of Sciences of Ukraine where he was working until 1996. He obtained his PhD in Physics from the State University of Donetsk in 1987 with a thesis on current fluctuations in tunnel junctions and his D.Sc. degree in 1995 from the Institute for Metal Physics in Kiev with a thesis on magnetic flux structures and transport properties of low-dimensional type-II superconductors. In 1993 he was awarded with a National Prize for young scientists in physics for a series of works on layered superconductors. Supported by the Alexander von Humboldt Fellowship he moved in 1996 to the group of Prof. Herbert Freyhardt at the University of Göttingen where he investigated magnetic flux instabilities in type-II superconductors. Since 1999 he works as a senior scientist in the Materials Modelling Division of the Technische Universität Darmstadt, Germany, on various problems of materials science and condensed matter physics, among them: electromagnetics of superconductor/magnet heterostructures, conductivity of organic semiconductors and polarization and transport properties of ferroelectrics.*

Con la colaboración de:



Facultad de Ciencias  
Universidad Zaragoza

**11 de Mayo (viernes)**

**LUGAR: SALA DE GRADOS DE LA  
FACULTAD DE CIENCIAS**

**HORA: 12:30**