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Ivana Lučića 5, HR -10000 ZAGREB
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01 61 68 137



01 61 68 187



zdravko.virag@fsb.hr



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P o z i v

Pozivamo Vas na predavanje

A PHASE FIELD MODEL FOR FERROELECTRIC MATERIALS - SIMULATION AND ENGINEERING ON NANOSCALE

koje će održati

Dr. Ingo Muench

Karlsruhe Institute of Technology (KIT), Njemačka

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Više o predavanju može se naći na web stranici: <http://www.csm.hr>.

PREDSJEDNIK DRUŠTVA

Prof. dr. sc. Zdravko Virag

A phase field model for ferroelectric materials - simulation and engineering on nanoscale

I. Muench*, J.E. Huber†

*Institute for Structural Analysis, Karlsruhe Institute of Technology (KIT)
Kaiserstr. 12, D-76131 Karlsruhe, ingo.muench@kit.edu

†Department of Engineering Science, University of Oxford
Parks Road, Oxford, OX1 3PJ, John.Huber@eng.ox.ac.uk

With the use of a phase field model we investigate tetragonal ferroelectric single crystals on the nanoscale, where only small numbers of domains are expected. Therefore, commonly occurring arrangements of domains with particular properties evolve.

In previous work, the existence of known domain topologies has been used to analyze ferroelectric microstructure and its evolution under electrical and mechanical loads, see e.g. [1, 2]. Two dimensional plane strain models of domain evolution are widespread and are able to characterize a great spectrum of ferroelectric single crystal behaviour. However the real crystals have three dimensional nature and produce microstructure domain topologies that cannot be found in two dimensions. This motivates the present, three dimensional study.

In this work, a 3D phase field model is used which has its origins in the work of [3, 4, 5, 6]. The model uses electrical polarization \mathbf{P} as the order parameter. For isothermal processes below the Curie temperature this model yields the commonly accepted Ginzburg-Landau equation for the evolution of the polarization. From a physical point of view, this describes the rearrangement of atoms within unit cells when phase interfaces move through the material.

References

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Curriculum Vitae

Personal Information

Name: Ingo Münch
Email: ingo.muench@kit.edu
Phone: +49 (721) 6082289
Birthday & -place: 25th April 1975, Balingen, Germany
Children: Anuk Münch, born 30th July 2004



Professional Career:

11/2009 Certification for leak testing methods (highest German level LT-3)
since 08/2009 Senior Lecturer/Assistant Professor at the Karlsruhe Institute for Technology
04/2009 – 07/2009 Deputize for a Senior Lecturer at the University of Karlsruhe
08/2008 – 04/2009 Research project at the University of Oxford (UK)
04/2008 – 07/2008 Teaching at the University of Karlsruhe (TH) and freelancer at Wagner&Partner engineers
04/2002 – 03/2008 Graduate assistant at the Institute of Structural Analysis, University of Karlsruhe (TH)
12/2001 – 03/2002 Graduate employee at the Institute of Structural Analysis, University of Karlsruhe (TH)
09/2001 – 11/2001 Structural engineer at Bitzer-Weber-Nolle consulting engineers, Albstadt
04/2000 – 06/2001 Freelancer at Mader steel manufacturer, Albstadt

Study of Civil Engineering and Ph.D. Thesis:

04/2002 – 10/2007 Ph.D. Thesis at the University of Karlsruhe (TH): A geometric and material nonlinear Cosserat model - theory, numerical treatment and fields of application
10/1995 – 08/2001 Study of Civil Engineering at the University of Karlsruhe (TH)