

# Umut Adem

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## CONTACT INFORMATION

İzmir Institute of Technology. *Phone no:* +90 232 7507609  
Department of Materials Science, *E-mail:* umutadem@iyte.edu.tr  
and Engineering, Urla, İzmir.

## RESEARCH INTERESTS

Under the general theme of materials chemistry (synthesis and structure-properties relationships): Multiferroics, Pb-free ferroelectrics/piezoelectrics, Electrocaloric materials, Magnetic and Magnetocaloric Properties of Metallic Alloys, High pressure synthesis, Magnetic properties of transition metal oxides, Impedance spectroscopy and dielectric relaxation phenomena, Energy harvesting, Energy materials.

## EDUCATION

**University of Groningen**, Groningen, The Netherlands

Ph.D., Chemistry, 24 October 2008

- Dissertation Topic: “Magnetoelectric coupling in Multiferroic Transition Metal Oxides”
- Advisor: Thomas T. M. Palstra

**Middle East Technical University**, Ankara, Turkey

M.S., Materials Science, December 2003

**Middle East Technical University**, Ankara, Turkey.

B.S., Department of Metallurgical and Materials Engineering, June 2001

Graduation Project: ‘The effect of Pb addition to the dielectric properties of BaTiO<sub>3</sub> ceramics’.

**Middle East Technical University**, Ankara, Turkey.

Minor Degree on Solid State Physics, January 2002

## PROFESSIONAL AND RESEARCH EXPERIENCE

**İzmir Institute of Technology, Department of Materials Science and Engineering**, İzmir, Turkey

*Asst. Prof.*

**February 2015 -**

**Ankara University, Department of Engineering Physics**, Ankara, Turkey

*TUBITAK Postdoctoral Research Fellow via 2232 Programme* **January 2013 - January 2015**  
Synthesis, structural, magnetic, magnetocaloric and magnetoresistive properties of novel magnetocaloric alloys

**University of Liverpool, Department of Chemistry**, Liverpool, United Kingdom

*Research Associate*

**March 2010 - August 2012**

High pressure synthesis of novel multiferroic and Pb-free Bi-based ferroelectric oxides; magnetic, dielectric, ferroelectric and structural characterization

- Principal Investigator Prof. Matthew J. Rosseinsky

**Leibniz Institute for Solid State and Materials Research, IFW Dresden**, Dresden, Germany

*Postdoc*

**June 2008 - September 2009**

- Research on Multiferroics

**Solid State Chemistry Group, University of Groningen**, Groningen, The Netherlands

*PhD Student*

**February 2004 - April 2008**

- PhD Thesis on ‘Magnetolectric coupling in multiferroic and magnetoelectric materials’

**Department of Metallurgical and Materials Engineering, Middle East Technical University (METU)**, Ankara, Turkey

*Research Assistant*

**December 2001 - December 2003**

- MSc Thesis entitled ‘Preparation of  $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$  Thin Films by Chemical Solution Deposition and their Electrical Characterization’

### **Internships**

- Roketsan Missiles Inc., Ankara, Turkey, January 2001, focused on NDT (Non-Destructive Testing) of Rocket Motor Cases
- Erkunt Casting Machining Plants, Ankara, Turkey, 1999, focused on nodular cast-iron casting process

### **PUBLICATIONS**

T. N. M. Ngo, **U. Adem**, and T. T. M. Palstra, ‘Origin of thermally stimulated depolarization currents in multiferroic  $\text{CuCrO}_2$ ’, **Appl. Phys. Lett.** 106, 152904 (2015).

P. Mandal, A. Manjon-Sanz, A. J. Corkett, T. P. Comyn, K. Dawson, T. Stevenson, J. Bennett, L. F. Henrichs, A. J. Bell, E. Nishibori, M. Takata, M. Zanella, M. R. Dolgos, **U. Adem**, X. Wan, M. J. Pitcher, S. Romani, T. T. Tran, P. S. Halasyamani, J. B. Claridge, M. J. Rosseinsky, Morphotropic Phase Boundary in the Pb-Free  $(1-x)\text{BiTi}_{3/8}\text{Fe}_{2/8}\text{Mg}_{3/8} - x\text{CaTiO}_3$  System: Tetragonal Polarization and Enhanced Electromechanical Properties, **Advanced Materials**, 27, 2883-2889, 2015.

**U. Adem**, G. Catalan, N. Mufti, A. A. Nugroho, B. Noheda, and T. T. M. Palstra, Dielectric Relaxation in  $\text{YMnO}_3$  single crystals, **Journal of Alloys and Compounds**, 638, 228-232, 2015.

**U. Adem**, I. Dincer, S. Akturk, M. Acet and Y. Elerman, Phase formation characteristics and magnetic properties of bulk  $\text{Ni}_2\text{MnGe}$  Heusler alloy, **Journal of Alloys and Compounds**, 618, 115-119, (2015).

M. Dolgos, **U. Adem**, A. Manjon-Sanz, X. Wan, T. Comyn, T. Stevenson, J. Bennett, A. J. Bell, T. T. Tran, P. S. Halasyamani, J. B. Claridge and M. J. Rosseinsky, Perovskite B-site compositional control of [110]<sub>p</sub> polar displacement of coupling in an ambient pressure stable Bi-based ferroelectric, **Angewandte Chemie International Edition**, 51, 10770, (2012).

M. Dolgos, **U. Adem**, X. Wan, Z. Xu, A. J. Bell, T. P. Comyn, T. Stevenson, J. Bennett, J. B. Claridge and M. J. Rosseinsky, Chemical control of octahedral tilting and off-axis A-cation displacement allows ferroelectric switching in a bismuth-based perovskite, **Chemical Science**, 3, 1426-1435, (2012).

M. Li, **U. Adem**, S. R. C. McMitchell, Z. Xu, C. I. Thomas, J. E. Warren, D. V. Giap, H. J. Niu, X. Wan, R. G. Palgrave, F. Schiffmann, F. Cora, B. Slater, T. L. Burnett, M. G. Cain, A. M. Abakumov, G. van Tendeloo, M. F. Thomas, M. J. Rosseinsky, J. B. Claridge, A polar corundum oxide displaying weak ferromagnetism at room temperature, **J. Am. Chem. Soc.**, 134 (8), 3737-3747 (2012).

**U. Adem**, L. Wang, D. Fausti, W. Schottenhamel, P. H. M. van Loosdrecht, A. N. Vasiliev, L. N. Bezmaternykh, B. Buechner, C. Hess and R. Klingeler, Magnetodielectric and Magnetoelastic Coupling in  $\text{TbFe}_3(\text{BO}_3)_4$ , **Physical Review B**, 82, 064406 (2010).

**U. Adem**, M. Mostovoy, N. Bellido, A. A. Nugroho, Ch. Simon, and T. T. M. Palstra, ‘Anomaly in Nonlinear Magnetoelectric Response of  $\text{YbMnO}_3$ ’, **Journal of Physics: Condensed Matter**, 21, 496002 (2009).

**U. Adem**, G. Nenert, Arramel, N. Mufti, G. R. Blake and T. T. M. Palstra, ‘Magnetodielectric Coupling by Exchange Striction in  $\text{Y}_2\text{Cu}_2\text{O}_5$ ’ **The European Physical Journal B**, 71, 393 (2009).

G. Nenert, **U. Adem**, E. M. Bauer, C. Bellitto, G. Righini, and T.T.M. Palstra, ‘Magnetodielectric coupling of a polar organic-inorganic hybrid Cr(II) phosphonate’ **Physical Review B**, 78, 054443 (2008).

A. A. Nugroho, N. Bellido, **U. Adem**, G. Nenert, Ch. Simon, M. O. Tjia, M. Mostovoy, and T. T. M. Palstra, ‘Enhancing the magnetoelectric coupling in  $\text{YMnO}_3$  by Ga doping’, **Physical Review B**, 75, 174435 (2007).

**U. Adem**, A. A. Nugroho, A. Meetsma, T. T. M. Palstra, ‘Ferroelectric displacements in multiferroic  $\text{Y}(\text{Mn,Ga})\text{O}_3$ ’, **Physical Review B**, 75, 014108 (2007).

MANUSCRIPTS IN  
PREPARATION

**U. Adem**, A. Arramel, G. Nenert, and T. T. M. Palstra, ‘Potential ferroelectricity and magnetodielectric coupling in polar antiferromagnetic  $\text{Er}_2\text{Cu}_2\text{O}_5$  and  $\text{Yb}_2\text{Cu}_2\text{O}_5$  ceramics’, to be submitted.