

CURRICULUM VITAE

(November 2015)



Personal Information

Name: Alexios

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Working Address: Physics Department, University of Ioannina, 45110, Ioannina, Greece

Familiar Status: Married with three children

Military Service: Greek Army (compulsory), May 1999-November 2000

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Studies

April 1993: 'Ptychion' (4 years degree) in Physics, University of Ioannina-Greece. October 1993-January 2000: Attendance of the Postgraduate Studies Program in Physics (1993-1995), and elaboration of PhD thesis entitled "*Preparation and Study of the Electronic and Magnetic Properties of the Iron Oxyborates Fe_3BO_5 and Fe_2BO_4* " (1995-1999) at the "Mössbauer Spectroscopy and Physics of Materials" Laboratory of the Physics Department, of the University of Ioannina, Greece, under the supervision of Prof. Vasilios Papaefthymiou (awarded January 2000).

Research & Academic Carrier

January 2001-September 2003: Pordocctoral Research Fellow at the "Magnetism and Spin Electronics" research group of the School of Physics at Trinity College Dublin-Ireland, led by Prof. J. M. D. Coey. October 2003-September 2009: Contract Lecturer/Assistant Prof. at and the Department of Materials Science and Engineering (2003-2008) and the Physics Department (2008-2009), of the University of Ioannina-Greece. September 2009-May 2015: Assistant Prof. at the Department of Physics of the University of Ioannina-Greece. May 2015-today: Associate Prof. at the Department of Physics of the University of Ioannina-Greece.

Scientific Research Interests

Experimental solid state and condensed matter physics and materials science, with emphasis on the structural, electronic, magnetic, electrical- and magneto-transport properties of solids. Special interest in:

• magnetic bulk and nanostructured materials • hybrid nanostructures • magnetic semiconductors • thin films • half-metals • ceramics • alloys • minerals and • bio-mimetic cluster structures.

Scientific Experience and Skills in Experimental Techniques

• Mössbauer Spectroscopy • X-ray diffraction, analysis and refinement of crystal structures • magnetization & magnetic susceptibility • electrical transport & magneto-transport • scanning (SEM) & transmission (TEM) electron microscopies • atomic & magnetic force microscopies (AFM-MFM) • UV, Vis & IR spectroscopies • heat capacity and thermal transport • preparation of bulk materials with solid state reactions • preparation of thin films by pulsed laser deposition (PLD) & sputtering.

Publications

50 works, published in peer reviewed international research journals (39), peer reviewed books (1) and peer reviewed proceedings of international conferences (10), which have gathered more than 1300 non-self citations and raised an h-index of 17 (source: www.scopus.com November 2015).

Selected publications:

1. 'Mössbauer and magnetization studies of Fe_2BO_4 ' A.P. Douvalis, V. Papaefthymiou, A. Moukarika, T. Bakas, G. Kallias, J. Physics: Condensed Matter, **12**, 177 (2000).

2. 'Mössbauer and Magnetization Studies of Fe_3BO_5 ' A.P. Douvalis, A. Moukarika, T. Bakas, G. Kallias, V. Papaefthymiou, J. Physics: Condensed Matter, **14**, 3303 (2002).

3. 'Mössbauer, magnetization and crystal structure studies of the double perovskites $Sr_2FeMo_{1-x}W_xO_6$, $x = 0, 0.1, 0.2, 0.3, \text{ and } 0.4$ ' A.P. Douvalis, M. Venkatesan, J.M.D. Coey, M. Grafoute, J.-M. Greneche, R. Suryanarayanan, J. Physics: Condensed Matter, **14**, 12611 (2002).

4. 'Ferromagnetism of a graphite nodule from the Canyon Diablo meteorite' J.M.D. Coey, M. Venkatesan, C.B. Fitzgerald, A.P. Douvalis, I. S. Sanders, Nature, **420**, 156 (2002).

5. 'Ferromagnetism in Fe-doped SnO_2 thin films' J.M.D. Coey, A.P. Douvalis, C.B. Fitzgerald, M. Venkatesan, Applied Physics Letters, **84**, 1332 (2004).

6. **'Dendrite-Like Self-Assembly of Magnetite Nanoparticles on Porous Silicon'** S. Balakrishnan, Y.K. Gun'ko, T.S. Perova, R.A. Moore, M. Venkatesan, A.P. Douvalis, P. Bourke, *Small*, **2**, 864 (2006).
7. **'The origin of ferromagnetism in ^{57}Fe -doped NiO'** A.P. Douvalis, L. Jankovic, T. Bakas, *J. Physics: Condensed Matter*, **19**, 436203 (2007).
8. **'Novel nanohybrids derived from the attachment of FePt nanoparticles on carbon nanotubes'** T. Tsoufis, A. Tomou, D. Gournis, A.P. Douvalis, I. Panagiotopoulos, B. Kooi, V. Georgakilas, I. Arfaoui, T. Bakas, *J. Nanoscience and Nanotechnology*, **8**, 5942 (2008).
9. **'CaFe₄As₃: A metallic iron arsenide with anisotropic magnetic and charge-transport properties'** I. Todorov, D.Y. Chung, C.D. Malliakas, Q. Li, T. Bakas, A. Douvalis, G. Trimarchi, K. Gray, J.F. Mitchell, A.J. Freeman, M.G. Kanatzidis, *J. American Chemical Society*, **131**, 5405 (2009).
10. **'IMSG09: A ^{57}Fe - ^{119}Sn Mössbauer spectra computer fitting program with novel interactive user interface'** A.P. Douvalis, A. Polymeros, T. Bakas, *J. Physics: Conference Series*, **217**, 012014 (2010).
11. **'Direct NMR evidence of phase solitons in the spin ground state of overdoped manganites'** D. Koumoulis, N. Panopoulos, A. Reyes, M. Fardis, M. Pissas, A. Douvalis, T. Bakas, D.N. Argyriou, G. Papavassiliou, *Physical Review Letters*, **104**, 077204 (2010).
12. **'Topotactic Redox Chemistry of NaFeAs in Water and Air and Superconducting Behavior with Stoichiometry Change'** I. Todorov, D.Y. Chung, H. Claus H, C.D. Malliakas, A.P. Douvalis, T. Bakas, J.Q. He, V.P. Dravid, M.G. Kanatzidis, *Chem. Materials*, **22**, 3916 (2010).
13. **'Biomimetic multifunctional porous chalcogels as solar fuel catalysts'** B.D. Yuhas, A.L. Smeigh, A.P.S. Samuel, Y. Shim, S. Bag, A.P. Douvalis, M.R. Wasielewski, M.G. Kanatzidis, *J. American Chemical Society*, **133**, 7252 (2011).
14. **'Structural, static and dynamic magnetic properties of dextran coated $\gamma\text{-Fe}_2\text{O}_3$ nanoparticles studied by ^{57}Fe NMR, Mössbauer, TEM and magnetization measurements'** M. Fardis, A.P. Douvalis, D. Tsitrouli, I. Rabias, D. Stamopoulos, Th. Kehagias, E. Karakosta, G. Diamantopoulos, T. Bakas, G. Papavassiliou, *J. Physics: Condensed Matter*, **24**, 156001 (2012).
15. **'A facile synthetic route toward air-stable magnetic nanoalloys with Fe-Ni/Fe-Co core and iron oxide shell'** A.P. Douvalis, R. Zboril, A.B. Bourlinos, J. Tucek, S. Spyridi, T. Bakas, *J. Nanoparticle Research*, **14**, 1130 (2012).
16. **'Tunable biomimetic chalcogels with Fe₄S₄ Cores and [Sn_nS_{2n+2}]⁴⁻(n = 1, 2, 4) building blocks for solar fuel catalysis'** Y. Shim, B.D. Yuhas, S.M. Dyar, A.L. Smeigh, A.P. Douvalis, M.R. Wasielewski, M.G. Kanatzidis, *J. American Chemical Society*, **135**, 2330 (2013).
17. **'Controlled preparation of carbon nanotube-iron oxide nanoparticle hybrid materials by a modified wet impregnation method'** Th. Tsoufis, A.P. Douvalis, Ch.E. Lekka, P.N. Trikalitis, T. Bakas, D. Gournis, *J. Nanopart. Research*, **15**, 1924 (2013).
18. **'Assembly-mediated interplay of dipolar interactions and surface spin disorder in colloidal maghemite nanoclusters'** A. Kostopoulou, K. Brintakis, M. Vasilakaki, K.N. Trohidou, A.P. Douvalis, A. Lascialfari, L. Manna, A. Lappas, *Nanoscale*, **6**, 3764 (2014).
19. **'Enhanced Photochemical Hydrogen Evolution from Fe₄S₄-Based Biomimetic Chalcogels Containing M²⁺ (M = Pt, Zn, Co, Ni, Sn) Centers'** Y. Shim, R.M. Young, A.P. Douvalis, S.M. Dyar, B.D. Yuhas, T. Bakas, M.R. Wasielewski, M.G. Kanatzidis, *J. Am. Chem. Soc.*, 2014, **136**, 13371 (2014).
20. **'Field-induced spin-flop in antiferromagnetic semiconductors with commensurate and incommensurate magnetic structures: Li₂FeGeS₄ (LIGS) and Li₂FeSnS₄ (LITS)'** J.A. Brant, C. Dela Cruz, J. Yao, A.P. Douvalis, T. Bakas, M. Sorescu, J.A. Aitken, *Inorg. Chem.*, 2014, **53**, 12265.
21. **'Fast lithium ion conduction in Li₂SnS₃: Synthesis, Physicochemical characterization, and electronic structure'** J. A. Brant, D. M. Massi, N. A. W. Holzwarth, J. H. Macneil, A. P. Douvalis, T. Bakas, S. W. Martin, M. D. Gross, J. A. Aitken, *Chem. Mat.*, 2015, **27**, 189.

Participation in Funded Scientific Research Projects:

1994-1995: 'Preparation and study of the magnetic properties of fine magnetic particles' (PENED 91, Greek General Secretariat for Research and Technology (GSRT)). 1996-1998: 'Preparation and study of the magnetic properties of fine magnetic particles' (Georgiou Stavrou Foundation-Ioannina). 1997-1998: 'Preparation and study of new microstructural phases for permanent magnet applications' (PENED 95, GSRT). 2001-2003: 'Advanced Magnetic Oxides for Responsive Engineering-AMORE' (European Commission). 2001-2003: 'Ulysses' (Irish and French Governments). 2004-2006: 'New systems of half-metallic oxides for magnetoelectronic applications-Pythagoras I' (Greek Ministry of Education (GME)). 2012-2015: 'Development of novel nano-porous materials for hydrogen storage-Thales' (GME).

Collaborations in Greece and International Collaborations

Current collaborations in Greece outside the University of Ioannina include the groups of: Dr. G. Papavassiliou and Dr. E. Devlin, (National Center for Scientific Research "Demokritos"-Athens), Prof. P. Trikalitis (Department of Chemistry, University of Crete-Heraklion), Dr. A. Lappas (IESL, Foundation for Research and Technology Hellas-Heraklion) and Dr. A. Godelitsas (University of Athens). Current international collaborations include the groups of: Prof. M. Kanatzidis (Northwestern University-USA), Prof. J. Aitken (Duquesne University-USA) and Prof. R. Zboril (Palacky University-Czech Republic).

Referee for International Scientific Journals

Journal of Magnetism and Magnetic Materials (Elsevier Science), Materials Letters (Elsevier Science), Journal of Alloys and Compounds (Elsevier Science), Journal of Physical Chemistry (American Chemical Society), Hyperfine Interactions (Springer Netherlands), Materials Science and Engineering B (Elsevier Science), Journal of Solid State Chemistry (Elsevier Science), Physica Status Solidi A (Wiley InterScience), ACS Nano (American Chemical Society), Water Research (Elsevier Science), Nanoscale (Royal Society of Chemistry), Scientific Reports (Nature Publishing Group), Chemical Society Reviews (Royal Society of Chemistry).

Teaching Experience and Student Supervision

15 years teaching experience after PhD of undergraduate and postgraduate students at the University of Ioannina-Greece and Trinity College Dublin-Ireland. Supervision of 7 MSc theses (4 accomplished-3 currently in course) in the fields of bulk magnetic, nanostructured and hybrid materials, and in physics education, as well as a number of undergraduate student degree dissertations at the University of Ioannina.

Participation in International Conferences

Participation in 19 international and 10 domestic (Greek) scientific conferences and presentation of relative scientific papers. Invited talks have been given to three international scientific conferences: at the 7th Seeheim Workshop on Mössbauer Spectroscopy, Frankfurt-Germany in June 2011, at the 4th North America-Greece-Cyprus Workshop on Paramagnetic Materials, Patras-Greece in June 2011 and at the 4th Workshop on Current Trends in Molecular and Nanoscale Magnetism (CTMNM), Ouranoupolis-Greece in June 2012.

Organization of Scientific Conferences

Member of the Organizing Committee of the XXVI Panhellenic Conference on Solid State Physics and Materials Science, which took place at the University of Ioannina in September 2010.

Scholarships

1988-1992: 'Georgiou Stavrou Foundation' scholarship for undergraduate studies. 1996-1998: 'Georgiou Stavrou Foundation' scholarship for postgraduate studies.

Awards

Best presentation award for the work on 'Intrinsic Ferromagnetism in ^{57}Fe -doped ZnO', at the XXIV Panhellenic Conference on Solid State Physics and Materials Science, Heraklion, Crete in September 2008.