

CURRICULUM VITAE

Andrea Falqui

PERSONAL INFORMATION

- Professional Address: Istituto Italiano di Tecnologia, Via Morego 30, 16163, Genova, Italy
- Tel: +39 010 71781 496 (office)
- Email: andrea.falqui@iit.it
- Born in Cagliari, Italy, April 9, 1969.

CURRENT RESEARCH

- Characterization of nanostructures by scanning and transmission electron microscopy (SEM, BF-TEM, ADF-STEM, EFTEM, EELS, EDX, HREM).
- Electron tomography techniques for the 3D morphological, chemical and structural characterization of nanostructures.
- Structural and compositional characterization of nanostructures using spherical aberration corrected microscopy.

ACADEMIC EDUCATION

- 1997-2000 **PhD in Physics**, University of Cagliari, Italy, full marks and honours
- Magnetic behaviour of nanocomposite materials
 - High Resolution Transmission Electron Microscopy of nanocomposite materials
- 1987-1993 Italian **Master Degree in Physics. University of Cagliari, Italy**, full marks and honours
- Preparation and SEM/EPMA characterization of the semi-magnetic compound MnGa_2Se_4

RESEARCH AND TEACHING EXPERIENCE

- 2006- **Senior Scientist, Head of the Electron Microscopy Laboratory at Istituto Italiano di Tecnologia**, Genova, Italy
- 2006-2009 **Invited Professor and Researcher, Condensed Matter Physics**, at National Institute of Applied Sciences, Toulouse, France
- TEM, STEM, and ancillary spectroscopic analysis of Nanomaterials
 - Professor of Physics
- 2002- **Assistant Professor of Chemical Physics in Cagliari University, Italy**
- Professor of Chemical Physics, Informatics, Mathematics and Physics of Materials
- 2001-2002 **European “Marie Curie” Post Doctoral position, thematic area: Physics**
- CEMES/CNRS Centre, Toulouse, France
 - Spatially Resolved Electron Energy Loss Spectrometry (EELS) studies of nanomaterials in STEM and TEM
- 1996-1997 **Research position in Chemical Physics in Cagliari University, Italy**
- Structural studies of nanocomposite materials
- 1993-1999 **Italian High School**
- Professor of Mathematics and Physics

PUBLICATIONS and CONTRIBUTIONS

Book chapter:

- L. Manna et al., *Comprehensive Nanoscience and Technology, Quantum Dots: Synthesis and Characterization*, Elsevier B.V., In Press

Peer- review journal articles :

56.

Catherine Amiens, Diana Ciuculescu, Andrea Falqui, Olivier Margeat, Pierre Lecante
Organometallic synthesis of CoAl nanoparticles and CoAl / Al nanoparticles and their behaviour upon air exposure
European Journal of Inorganic Chemistry, 2010, 1599–1603

55.

Andrea Falqui, Giovanni Bertoni, Alessandro Genovese, Sergio Marras, Mario Malerba, Isabella R. Franchini and Liberato Manna
Electron Microscopy Studies of Beam-Sensitive PbTe-based nanostructures
Microscopy Research and Technique, in press, DOI: 10.1002/jemt.20843

54.

Dmitry Baranov, Angela Fiore, Marijn van Huis, Cinzia Giannini, Andrea Falqui, Ugo Lafont, Henny Zandbergen, Marco Zanella, Roberto Cingolani and Liberato Manna
Assembly of Colloidal Semiconductor Nanorods in Solution by Depletion Attraction
Nanoletters, 2010, 10 (2), pp 743–749

53.

Anna Corrias, Gavin Mountjoy, Danilo Loche, Victor Puentes, Andrea Falqui, Marco Zanella, Wolfgang J. Parak and Maria F. Casula
Identifying Spinel Phases in Nearly Monodisperse Iron Oxide Colloidal Nanocrystal
J. Phys. Chem. C, 2009, 113 (43), pp 18667–18675

52.

Isabella R. Franchini, Giovanni Bertoni, Andrea Falqui, Cinzia Giannini, Lin Wang Wang and Liberato Manna
Colloidal PbTe-Au Nanocrystal Heterostructures
Journal of Materials Chemistry, 2010, (7), 1357-1366

51.

K. Soulantica, F. Wetz, J. Maynadié, A. Falqui, R.P. Tan, T. Blon, B. Chaudret, and M. Respaud
Magnetism of single-crystalline Co nanorods
Applied Physics Letters, 95, 152504 (2009)

50.

Sasanka Deka, Andrea Falqui, Giovanni Bertoni, Claudio Sangregorio, Giordano Poneti, Giovanni Morello, Milena De Giorgi, Cinzia Giannini, Roberto Cingolani, Liberato Manna and P. Davide Cozzoli
Fluorescent Asymmetrically Cobalt-Tipped CdSe@CdS Core@Shell Nanorod Heterostructures Exhibiting Room-Temperature Ferromagnetic Behavior
Journal of American Chemical Society, 2009, 131 (35), pp 12817–12828

49.

Danilo Loche, Maria F. Casula, Andrea Falqui, Sergio Marras and Anna Corrias
Preparation of Mn, Ni, Co Ferrite Highly Porous Silica Nanocomposite Aerogels by an Urea-Assisted Sol-Gel Procedure

48.

Daniela Carta, Maria F. Casula, , [Andrea Falqui](#), Danilo Loche, Gavin Mountjoy, Claudio Sangregorio and Anna Corrias

A Structural and Magnetic Investigation of the Inversion Degree in Ferrite Nanocrystals MFe_2O_4 ($M = Mn, Co, Ni$)

Journal of Physical-Chemistry C, 2009, 113 (20), 8606–8615

47.

Régis Philippe, Brigitte Caussat, [Andrea Falqui](#), Yolande Kihn, Philippe Kalck, Serge Bordère, Dominique Plee, Patrice Gaillard, Daniel Bernardg, Philippe Serp

An original growth mode of MWCNTs on alumina supported iron catalysts

Journal of Catalysis, 2009, in press Appeared on web, DOI: 10.1016/j.jcat.2009.02.027

46.

Daniela Carta, Maria F. Casula, Anna Corrias, [Andrea Falqui](#), Danilo Loche, Gavin Mountjoy, and Peng Wang

Structural and Magnetic Characterization of Co and Ni Silicate Hydroxides in Bulk and in Nanostructures within Silica Aerogels

Chemistry of Materials, 2009, 21 (5), pp 945–953

45.

Sasanka Deka, Alessandra Quarta, Maria Grazia Lupo, [Andrea Falqui](#), Simona Boninelli, Cinzia Giannini, Giovanni Morello, Milena De Giorgi, Guglielmo Lanzani, Corrado Spinella, Roberto Cingolani, Teresa Pellegrino and Liberato Manna

CdSe/CdS/ZnS double shell nanorods with high photoluminescence efficiency and their application as bio-labeling probes

Journal of American Chemical Society, 2009, 131 (8), 2948–2958

44.

Revathi R. Bacsá, Jeannette Dexpert-Ghys, Marc Verelst, [Andrea Falqui](#), Bruno Machado, Wolfgang S Bacsá, Peter Chen, Shaik. M. Zakeeruddin, Michael Graetzel and Philippe Serp

Synthesis and structure-property correlation in shape controlled ZnO nanoparticles prepared by Chemical Vapour Synthesis and their application in Dye Sensitized Solar Cells

Advanced Functional Materials, 2009, 19, 875–886

43.

Paolo Falcaro, Luca Malfatti, Tongjit Kidchob, Giacomo Giannini, [Andrea Falqui](#), Maria F. Casula, Heinz Amenitsch, Benedetta Marmiroli, Gianluca Greci, Plinio Innocenzi

Hierarchical porous silica films with ultra-low refractive index

Chemistry of Materials, 2009, 21 (10), 2055–2061

42.

Jérôme Maynadié, Asaf Salant, [Andrea Falqui](#), Marc Respaud, Ehud Shaviv, Uri Banin, Katerina Soulantica and Bruno Chaudret

Cobalt growth on the tips of CdSe nanorods

Angewandte Chemie International Edition, 2009, 48 (10), 1814-1817

41.

Gavin Mountjoy, [Andrea Falqui](#), Anna Corrias and Mhairi Gass

A transmission electron microscopy study of Fe-Co alloy nanoparticles in a silica aerogel matrix using HREM, EDX, and EELS

Microscopy and Microanalysis, 2009, 15 (02), 114-124

40.

M. Casavola, [A. Falqui](#), M. A. Garcia, M. García-Hernández, C. Giannini, R. Cingolani, and P. D. Cozzoli

Exchange-Coupled Bimagnetic Cobalt/Iron Oxide Branched Nanocrystal Heterostructures

Nano Letters, 2009, 9 (1), pp. 366-376

39.
L-M. Lacroix, S. Lachaize, A. Falqui, M. Respaud, and B. Chaudret
Iron Nanoparticles Growth in Organic Super-Structures
Journal of American Chemical Society, 2009, 131 (2), 549-557
38.
D. Carta, M. F. Casula, A. Corrias, A. Falqui, G. Pinna, G. Navarra
Structural and Magnetic Characterization of Synthetic Ferrihydrite Nanoparticles
Materials Chemistry and Physics, 2009, 113, 349-355
37.
Albert Figuerola, Isabella R. Franchini, Angela Fiore, Rosanna Mastria, Andrea Falqui, Giovanni Bertoni, Sara Bals, Gustaaf Van Tendeloo, Stefan Kudera, Roberto Cingolani, and Liberato Manna
End-to-End Assembly of Shape-Controlled Nanocrystals via a Nano-welding Approach Mediated by Gold Domains
Advanced Materials, 2009, vol. 21 (5), pp. 550-554
36.
Arnaud Glaria, Myrtil L. Kahn, Andrea Falqui, Pierre Lecante, Vincent Collière, Marc Respaud, Bruno Chaudret
An Organometallic Approach for Very Small Maghemite Nanoparticles: Synthesis, Characterization, and Magnetic Properties
ChemPhysChem, 2008, 9 (14), 2035 – 2041
35.
Y. Soumare, J.-Y. Piquemal, T. Maurer, F. Ott, G. Chaboussant, A. Falqui and G. Viau
Oriented magnetic nanowires with high coercivity
Journal of Materials Chemistry, 2008, 18 (46), pp. 5696-5702
34.
Daniele Gozzi, Alessandro Latini, Daniela Carta, Anna Corrias, Andrea Falqui, Gavin Mountjoy, Laura Lazzarini, Giancarlo Salviati, Steven Fiddy
Lanthanide doped scandia and yttria cathodoluminescent films: a comparative study
Chemistry of Materials, 2008, 20, 5666–5674
33.
Marco Zanella, Andrea Falqui, Stefan Kudera, Liberato Manna, Maria F. Casula, Wolfgang J. Parak
Growth of colloidal hybrid nanoparticles of fluorescent group II/VI particles on top of magnetic iron-platinum
Journal of Materials Chemistry, 2008, 18, 4311 – 4317
32.
Laura Rodríguez-Pérez, Emmanuelle Teuma, Andrea Falqui, Montserrat Gómez, Philippe Serp
Supported Ionic Liquid Phase Catalysis on Functionalized Carbon Nanotubes
Chemical Communications, 2008, (35),4201-4203
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L-M. Lacroix, S. Lachaize, A. Falqui, T. Blon, J. Carrey, and M. Respaud, F. Dumestre, C. Amiens, O. Margeat, and B. Chaudret, P. Lecante and E. Snoeck
Ultrasmall iron nanoparticles: Effect of size reduction on anisotropy and magnetization
Journal of Applied Physics 103, 07D521 (2008)
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A. Figuerola, A. Fiore, R. Di Corato, A. Falqui, C. Giannini, E. Micotti, A. Lascialfari, M. Corti, R. Cingolani, T. Pellegrino, P. D. Cozzoli and L. Manna
One-pot Synthesis and Characterization of Size Controlled Bi-magnetic FePt-Iron Oxide Heterodimer Nanocrystals
Journal of American Chemical Society, 2008; 130(4); 1477-1487
- 29.

- A.Casu, M. F. Casula, A. Corrias, A. Falqui, D. Loche, S. Marras and C. Sangregorio
The influence of composition and porosity on the magnetic properties of FeCo-SiO₂ nanocomposite aerogels
Physical Chemistry Chemical Physics, 2008, (7),1043-1052
28.
F. Wetz, K. Soulantica, A. Falqui, M. Respaud, E. Snoeck and B. Chaudret
Hybrid Co–Au Nanorods: Controlling Au Nucleation and Location
Angewandte Chemie International Edition, 2007, vol. 46 (37), pp. 7079-7081
27.
D. Ciuculescu, C. Amiens, M. Respaud, A. Falqui, P. Lecante, R. Benfield, L. Jiang, K. Fauth and B. Chaudret
One-Pot Synthesis of Core-Shell FeRh Nanoparticles
Chemistry of Materials, 2007, vol. 19(19), pp. 4624-4626
26.
A. Millan, F. Palacio, A. Falqui, E. Snoeck, V. Serin, A. Bhattacharjee, V. Ksenofontov, P. Gutlich, I. Gilbert
Maghemite polymer nanocomposites with modulated magnetic properties
Acta Materialia, 2007, vol. 55 (6), pp. 2201-2209
25.
A. Casu, M.F. Casula, A. Corrias, A. Falqui, D. Loche, and S. Marras
Magnetic and Structural Investigation of Highly Porous CoFe₂O₄-SiO₂ Nanocomposite Aerogels
Journal of Physical-Chemistry C, 2007, vol. 111, pp. 916-922
24.
F. Wetz, K. Soulantica, M. Respaud, A. Falqui, B. Chaudret
Synthesis and magnetic properties of Co nanorod superlattices
Materials Science and Engineering C, 2007, vol. 27 (5), pp. 1162-1166
23.
Cannas C., Falqui A., Musinu A., Peddis D., Piccaluga G.
CoFe₂O₄ nanocrystalline powders prepared by citrate-gel methods: Synthesis, structure and magnetic properties
Journal of Nanoparticles Research, 2006, vol. 8 (2), pp. 255-267
22.
Casula M.F., Concas G., Congiu F., Corrias A., Falqui A. and Spano G.
Near equiatomic FeCo nanocrystalline alloy embedded in an alumina aerogel matrix: microstructural and related magnetic features
Journal of Physical Chemistry B, 2005, 109, 23888-23895
21.
Ennas G., Falqui A., Marongiu G. and Paschina G.
Iron-Cobalt Alloy Nanoparticles Embedded in an Alumina Xerogel Matrix
Chemistry of Materials, 2005, 17, 6486-6491
20.
Falqui A., Lampis N., Geddo-Lehmann A. and Pinna G.
Low temperature magnetic behaviour of perovskite compounds PbFe_{1/2}Ta_{1/2}O₃ and PbFe_{1/2}Nb_{1/2}O₃
Journal of Physical Chemistry B, 109, 2005, 22967-22970
19.
Kudera S., Carbone L., Casula M.F., Cingolani R., Falqui A., Snoeck E., Parak W. J. and Manna L.
Selective growth of PbSe on one or on both tips of colloidal semiconductor nanorods
Nano Letters. 5(3):445-449, 2005
18.
Ennas G., Falqui A., Marras S, Sangregorio C., Marongiu G.

Influence of Metal Content on Size, Dispersion and Magnetic Properties of Iron-Cobalt Alloy Nanoparticles Embedded in Silica Matrix

Chemistry of Materials. 16(26):5659-5663, 2004

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Corrias A., Casula M.F., Falqui A., Paschina G.

Preparation and characterization of FeCo-Al₂O₃ and Al₂O₃ aerogels.

Journal of Sol-Gel Science & Technology. 31(1-3):83-86, 2004.

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Corrias A., Casula MF., Falqui A., Paschina G.

Evolution of the structure and magnetic properties of FeCo nanoparticles in an alumina aerogel matrix

Chemistry of Materials. 16(16):3130-3138, 2004.

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Congiu F., Concas G., Ennas G., Falqui A., Fiorani D., Marongiu G., Marras S., Spano G., Testa AM.

Magnetic properties of nanocrystalline CoFe₂O₄ dispersed in amorphous silica

Journal of Magnetism & Magnetic Materials. 272-76 (Part 2 Special Issue SI):1561-1562, 2004.

14.

Bonacchi D., Caneschi A., Dornigac D., Falqui A., Gatteschi D., Rovai D., Sangregorio C., Sessoli R.

Nanosized iron oxide particles entrapped in pseudo-single crystals gamma-cyclodextrin

Chemistry of Materials. 16(10):2016-2020, 2004.

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Bonacchi D., Caneschi A., Gatteschi D., Sangregorio C., Sessoli R., Falqui A.

Synthesis and characterisation of metal oxides nanoparticles entrapped in cyclodextrin

Journal of Physics & Chemistry of Solids. 65 (4 Special Issue SI):719-722, 2004.

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Gilbert I., Millan A., Palacio F., Falqui A., Snoeck E., Serin V.

Magnetic properties of maghemite nanoparticles in a polyvinylpyridine matrix

Polyhedron. 22(14-17):2457-2461, 2003.

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Casula MF., Corrias A., Falqui A., Serin V., Gatteschi D., Sangregorio C., Fernandez CD., Battaglin G.

Characterization of FeCo-SiO₂ nanocomposite films prepared by sol-gel dip coating

Chemistry of Materials. 15(11):2201-2207, 2003.

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Falqui A., Serin V., Calmels L., Snoeck E., Corrias A., Ennas G.

EELS investigation of FeCo/SiO₂ nanocomposites

Journal of Microscopy. 210 (Part 1):80-88, 2003.

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Ennas G., Casula MF., Falqui A., Gatteschi D., Marongiu G., Marras S., Piccaluga G.

Non-stoichiometric CoFe₂O₄ nanoparticles supported on an amorphous silica matrix

Journal of Sol-Gel Science & Technology. 26(1-3):463-466, 2003.

8.

Navarra G., Falqui A., Piccaluga G., Pinna G.

The structure of a zinc metaphosphate glass. A reverse Monte Carlo study

Physical Chemistry Chemical Physics. 4(19):4817-4822, 2002.

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Cannas C., Casula MF., Concas G., Corrias A., Gatteschi D., Falqui A., Musinu A., Sangregorio C., Spano G.

Magnetic properties of gamma-Fe₂O₃-SiO₂ aerogel and xerogel nanocomposite materials

Journal of Materials Chemistry. 11(12):3180-3187, 2001.

6. Ennas G., Casula MF., Falqui A., Gatteschi D., Marongiu G., Piccaluga G., Sangregorio C., Pinna G. *Nanocrystalline iron-cobalt alloys supported on a silica matrix prepared by the sol-gel method* Journal of Non-Crystalline Solids. 293:1-9, 2001.
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3. Ennas G., Falqui A., Piccaluga G., Solinas S., Gatteschi D., Sangregorio C., Benedetti A. *Properties of nanocrystalline nickel particles in Ni-SiO₂ composites* Zeitschrift fur Naturforschung Section A-A Journal of Physical Sciences. 55(6-7):581-588, 2000.
2. Ennas G., Marongiu G., Musinu A., Falqui A., Ballirano P., Caminiti R. *Characterization of nanocrystalline gamma-Fe₂O₃ prepared by wet chemical method* Journal of Materials Research. 14(4):1570-1575, 1999.
1. Balerna A., Bionducci M., Falqui A., Licheri G., Meneghini C., Navarra G., Bettinelli M. *A structural study of Sr Metaphosphate glass by anomalous X-Ray scattering and EXAFS spectroscopy* Journal of Non-Crystalline Solids. 234:607-612, 1998.