Fabio Iesari

Actual position

Ph.D. student at the university of Camerino

Education and Training

Master's Degree in Physics

University of Camerino, 9 July 2013, final mark: 110/110 e lode (full mark with honors)

- Thesis: *Study of local ordering in liquid and undercooled Nickel by X-ray absorption spectroscopy.*
- Supervisor: Prof. Andrea Di Cicco
- Assistant supervisor: Dott. Marco Minicucci
- Experimental thesis in condensed matter physics

Bachelor's Degree in Physics

University of Camerino, 22 February 2011, final mark: 110/110 e lode (full mark with honors)

- Thesis: *Diffrazione dei raggi X su materiali nanocristallini: studio del Bismuto.* (*X-ray diffraction on nanocrystal materials: study of Bismuth*)
- Supervisor: Prof. Andrea Di Cicco
- Assistant supervisor: Dott. Marco Minicucci

Teaching and advising

University of Camerino, ITALY

Didactic tutor
Camerino - 2014/15

- tutored first year physics students for the course *Mechanics and Thermodynamics* (25 hours)
- tutored second year physics students for the course *Electromagnetism* (20 hours)

Camerino - 2015/16

- tutored second year physics students for the course *Electromagnetism* (25 hours)

Thesis tutor

- tutored a student bachelor's thesis: *Disordine strutturale nei liquidi: il fattore di struttura* (*Structural disorder in liquids: structure factor*)

Research Activity and Experiences

My research activity focuses on the investigation of condensed matter under extreme conditions, high temperature and high pressure, by x-ray absorption spectroscopy (XAS) and x-ray diffraction (XRD).

- assembled and built many samples for different XAS experiments, utilized different workstations for high-temperature (furnace) and high-pressure (Paris-Edinburgh, DACs) measurements;
- upgraded and debugged a program based on Reverse Monte Carlo approach to analyze EXAFS and diffraction data;
- developed programs for geometrical analysis of structures based on used methods in literature (e.g. Common Neighbor Analysis);
- investigated the local structure in liquid and undercooled liquid metals (Nickel, Cadmium, Zinc) and metal alloys (InSn);
- proposed and conducted different experiments at synchrotron beamlines (ELETTRA, Soleil) and FEL (Fermi);

- developed a Graphical User Interface (GUI) for the suite of programs GNXAS using wxPython;

- presented my research activity at different conferences both with oral and poster presentations.

Publications

[1] **Local fivefold symmetry in liquid and undercooled Ni probed by x-ray absorption spectroscopy and computer simulations**, A. Di Cicco, F. Iesari, S. De Panfilis, M. Celino, S. Giusepponi, A. Filipponi, *Phys. Rev. B* 89, 060102(R) (12-02-2014)

[2] **Spectrometer for X-ray emission experiments at FERMI free-electron-laser**, L. Poletto, F. Frassetto, P. Miotti, A. Di Cicco, P. Finetti, C. Grazioli, F. Iesari, A. Kivimäki, S. Stagira, M. Coreno, *Rev. Sci. Instrum.* 85, 103112 (17-10-2014)

[3] **Spectrometer for single-shot x-ray emission and photon diagnostics**, F. Frassetto, P. Miotti, C. Callegari, M. de Simone, P. Finetti, E. Giangrisostomi, C. Grazioli, F. Iesari, A. Kivimäki, R. Mincigrucci, E. Principi, S. Stagira, A. Di Cicco, M. Coreno, L. Poletto, *Proc. SPIE 9210, X-Ray Free-Electron Lasers: Beam Diagnostics, Beamline Instrumentation, and Applications II*, 92100E (05-09-2014)

[4] **Glass polymorphism in amorphous germanium probed by first-principles computer simulations**, G. Mancini, M. Celino, F. Iesari, A. Di Cicco, *J. Phys. Condens. Matter* 28, 015401 (07-12-2015)

[5] **New Graphical User Interface for EXAFS analysis with the GNXAS suite of programs**, K. Hatada, F. Iesari, L. Properzi, M. Minicucci, A. Di Cicco, *J. Phys.: Conf. Ser.* 712, 012002 (05-2016)

[6] **Local symmetry in liquid metals probed by x-ray absorption spectroscopy**, F. Iesari, A. Di Cicco, *J. Phys.: Conf. Ser.* 712, 012038 (05-2016)

[7] **Structural evolution mechanisms of amorphous and liquid As_2Se_3 at high pressures**, L. Properzi, M. Santoro, M. Minicucci, F. Iesari, M. Ciambezi, L. Nataf, Y. Le Godec, T. Irifune, F. Baudelet, and A. Di Cicco, *Phys. Rev. B* 93, 214205 (27-06-2016)

[8] **An investigation of the structure of liquid Zn by X-ray absorption spectroscopy**, F. Iesari, A. Trapananti, M. Minicucci, A. Filipponi, A. Di Cicco, *Nucl. Instr. Meth. Phys. Res. B* in press

[9] **Crystalline nucleation in undercooled liquid nickel**, A. Filipponi, A. Di Cicco, S. De Panfilis, P. Giammatteo, F. Iesari, *Acta Mater.* 124, 261 (01-02-2017)

Workshops and Conferences

Workshop on European X-ray Free Electron Laser
University of Bologna - Department of physics and astronomy (IT)
2014 July 3 to 4
attended as a participant

Science@FELs
Paul Scherrer Institute (Villigen, CH)
2014 September 15 to 17
attended as a participant, poster presentation: *Spectrometer for single shot X-ray emission and photon diagnostics*

Workshop Wien2k
Institute of Physics PAS (Warsaw, PL)
2014 September 29 to October 1
attended as a participant

XIV International Workshop on Complex Systems
Fai della Paganella (IT)
2015 March 22 to 25
attended as a speaker, abstract title: *Local ordering in liquid metals probed by x-ray absorption spectroscopy*

XXIII SILS Meeting
University of Trento (IT)
2015 July 8 to 10
attended as a speaker, abstract title: *Local ordering in liquid metals probed by x-ray absorption spectroscopy*

XAFS 16
Karlsruhe Institute of Technology (DE)
2015 August 23 to 28
attended as a participant, poster presentation: *Local symmetry in liquid metals probed by x-ray absorption spectroscopy*

EWinS 2016, School on core level spectroscopies
University of Nova Gorica (Adjovščina, SI)
2016 February 1 to 11
participant, Early Career Investigator talk: *Local symmetry in liquid metals probed by x-ray absorption spectroscopy*

EUSpec Training School
on Multiple Scattering Codes and MSNano Conference
Institute of Physics, University of Rennes 1 (FR)
2016 June 27 to July 2
attended as a participant, poster presentation: *X-ray absorption spectroscopy: new insights on the three-dimensional liquid structure*

LAM-16
Bonn, Bad Godesberg (DE)
2016 September 4 to 9
attended as a speaker, abstract title: *Local geometry in liquid metals and alloys probed by x-ray absorption spectroscopy*

Prizes and Awards

Best Poster Award
at the 16th International Conference on XAFS

Best Poster Award (Physics section)
at the 5th Scientific Day of the School of Science and Technology, Camerino

SAS Award 2016
award given by the University of Camerino to three Ph.D. students demonstrating outstanding research performance

Scholarships

- **Short Term Scientific Mission** within the EUSpec COST Action (MP1306)
  Financial support for a one month stay (September 2015) at the Institute of Physics in the University of Rennes 1

Language skills

Mother tongue

- Italian

Other language(s)

- English
  Understanding: C1, Speaking: B2, Writing: B2
- French
  Understanding: A2, Speaking: A2, Writing: A2

IT SKILLS

Operating system(s):

- Linux, Windows, MacOS.

Programming language(s)

- Basic user: LabVIEW, C, Java, Phyton, Mathematica
- Good knowledge and experience of Fortran, especially used in scientific environment.

Software package(s)

- Independent user of common Office programs on different operating systems: Windows, MacOS e Linux.
- LaTeX
- Basic user: Adobe Photoshop, Adobe Premier, GIMP

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