

Yimin Mijiti

RESEARCH INTERESTS

I am interested in the studies of disordered systems under extreme conditions using x-ray and optical spectroscopy techniques. In particular, I am curious about the phenomena of polyamorphism in liquids and glasses at high pressure and high temperature. I am also interested in the general studies of correlated electronic, magnetic and structural phase transitions in the crystalline systems at elevated pressures. I have passion for engaging with scientific instruments and their developments. I am experienced with the use of diamond anvil cells coupled with various characterization techniques including x-ray absorption spectroscopy, x-ray magnetic circular dichroism, x-ray diffraction, Raman and infrared spectroscopy.

EDUCATION

- Università di Camerino** Camerino, Italy
Ph.D. in theoretical and experimental physics-ciclo XXXII 12/2016–09/2020
– Thesis: “Transitions and local properties under extreme conditions probed by energy dispersive x-ray absorption spectroscopy.”
Supervisors: Prof. Andrea Di Cicco, Dr. Francois Baudelet
- Università di Camerino** Camerino, Italy
M.S. in Physics 10/2013–10/2016
– Thesis: “Characterization of SEI growth in ZFO based lithium ion batteries probed by x-ray absorption near-edge spectroscopy.”
Supervisor: Prof. Roberto Gunnella
- Capital Normal University** Beijing, China
B.S. in Physics 09/2008–07/2012
– Thesis: “Raman characterization of Graphene”.
Supervisor: Prof. Pei Jie Wang

ACTIVITIES, ATTENDED SCHOOLS AND CONFERENCES

- Stage at ODE dispersive EXAFS beamline** 09.2019-11/2019
Institute: Synchrotron SOLEIL Saclay, France
Status: co-funded PhD student
- SILS 2019 conference** 09.2019
Institute: Università di Camerino Camerino, Italy
Presentations: two poster presentations
- School on high pressure techniques** 06.2019
Institute: European Synchrotron Radiation Facility (ESRF) Grenoble, France
- XAFS17 international conference** 07.2018
Institute: Jagiellonian University Krakow Krakow, Poland
Presentations: one poster presentation

Spring school on material science under extreme conditions Institute: University of Bordeaux	04.2018 Bordeaux, France
XIV summer school on synchrotron radiation Institute: Synchrotron Elettra	09.2017 Trieste, Italy
Stage at ODE dispersive EXAFS beamline Institute: Synchrotron SOLEIL Status: co-funded PhD student	02.2019-09/2017 Saclay, France

TEACHING EXPERIENCES

- **Teaching Assistant** at Università di Camerino 2018-2019 academic year, 2nd semester
Course: exercises on the major topics in the classical physics, for the degree course of : Biosciences/Biotechnology (L-13) and Geology (L-34).
Total hours: 32

SCHOLARSHIPS AND AWARDS

- **Scholarship to support scientific research and activities** 02/2020–12/2020
Institute: School of science and technology, Università di Camerino Camerino, Italy
- **Full scholarship for the Ph.D. Program** 12/2016–12/2019
Institute: School of advanced studies, Università di Camerino Camerino, Italy
- **Scholarship for outstanding Xinjiang students** 10/2013–10/2015
Institute: Department of Education, Xinjiang Autonomous Region Urumqi, China
- **Full scholarship for the Masters Program** 10/2013–04/2016
Institute: ERSU di Camerino Camerino, Italy
- **Excellent student award** 04/2010
Institute: Physics Department Capital Normal University Beijing, China

PROFESSIONAL SKILLS

- **High pressure experimnts with DACs**
Design and developments of resistively heated DACs.
Polishing of anvil seats, gluing/installing anvils, anvil allignments.
Gasket preparations (indentation, drilling), sample (liquid,solid) loading.
- **Measurements, data analysis and interpretations of the following characterization techniques:**
Static or time resolved x-ray absorption spectroscopy (XAS) with dispersive geometry.
X-ray diffraction (XRD).
Combined XAS and XRD experiments.
X-ray fluorescence (XRF).
Raman and infrared (IR) spectroscopy.
- **Data analysis and simulation:**
MXAN and CTM4XAS codes for theoretical calculations of the XANES.
GNXAS and Demeter (include Artemis and Athena) suits for analysis of the EXAFS signal.
Combined XAS and XRD experiments.
Powder Cell and Area Diffraction Machine programs for XRD analysis.
Gnuplot and Origin programs for data visualization.

PROGRAMMING

- **Fortran:** medium level, for scientific calculations
- **Matlab:** basics, for advanced data analysis
- **Python:** basics, for advanced data analysis

LANGUAGES

- **Uighur & Turkish:** mother language
- **English & Chinese:** proficient
- **Italian:** A2 or slightly higher level

EXPERIENCES WITH THE USE OF SYNCHROTRON RADIATION

From the beginning of my PhD study, I submitted more than 10 proposals as the main proposer to the XAS, XRD and IR beamlines of SOLEIL (Saclay, France), Elettra (Trieste, Italy), and ESRF synchrotron facilities. Seven of them have been accepted after the first submission or re-submission, two were declined, part of them are under evaluations. I have participated more than 12 weeks of experiments at different synchrotron beamlines during my PhD work.

PROJECT APPLICATIONS:

Project: Joint usage/Research, Premier Research institute for ultrahigh pressure sciences (PRIUS).

Project title: Time resolved structure evolution at high pressure and temperature probed by dispersive XAS.

Project leader: Yimin Mijiti

Other members: Francois Baudelet, Lucie Nataf, Angela Trapananti, Andrea Di Cicco, Tetsuo Irifune.

Project status: accepted, 1st pair of NPD anvils were received from the partner at the Ehime University (Japan).

LIST OF PUBLICATIONS

- [1] **Y. Mijiti**, C. Kai, J. E. F. S. Rodrigues, L. Nataf, Z. Hu, A. Trapananti, A. Di Cicco, and F. Baudelet, “Crystal and electronic structure in Co_3O_4 spinel under pressure proved by xanes and raman”, (*article under review*) *Phys. Rev. B*,
- [2] **Y. Mijiti**, M. Perri, J. Coquet, L. Nataf, M. Minicucci, A. Trapananti, T. Irifune, F. Baudelet, and A. Di Cicco, “A new internally heated diamond anvil cell system for time-resolved optical and x-ray measurements”, *Review of Scientific Instruments*, vol. 91, no. 8, p. 085 114, 2020.
- [3] **Y. Mijiti**, A. Trapananti, M. Minicucci, M. Ciambezi, J. Coquet, L. Nataf, F. Baudelet, and A. Di Cicco, “Development of a high temperature diamond anvil cell for x ray absorption experiments under extreme conditions”, *Radiation Physics and Chemistry*, vol. 175, p. 108 106, 2020, 17th International Conference on X-ray Absorption Fine Structure - XAFS2018, ISSN: 0969-806X.
- [4] S. Rezvani, **Y. Mijiti**, R. Gunnella, F. Nobili, A. Trapananti, M. Minicucci, M. Ciambezi, D. Bresser, S. Nannarone, S. Passerini, *et al.*, “Structure rearrangements induced by lithium insertion in metal alloying oxide mixed spinel structure studied by x-ray absorption near-edge spectroscopy”, *Journal of Physics and Chemistry of Solids*, vol. 136, p. 109 172, 2020.
- [5] K. Chen, F. Baudelet, **Y. Mijiti**, L. Nataf, A. Di Cicco, Z. Hu, S. Agrestini, A. C. Komarek, M. Sougrati, J. Haines, *et al.*, “Revisiting the phase transition of magnetite under pressure”, *The Journal of Physical Chemistry C*, vol. 123, no. 34, pp. 21 114–21 119, 2019.
- [6] J. Meng, K. Chen, **Y. Mijiti**, D. Chen, F. Choueikani, Z. Zou, L. Wang, G. Mu, W. Geng, Q. Kong, *et al.*, “Charge-transfer-induced interfacial exchange coupling at the co/bi fe o 3 interface”, *Physical Review Applied*, vol. 12, no. 4, p. 044 010, 2019.
- [7] K. Chen, **Y. Mijiti**, S. Agrestini, S.-C. Liao, X. Li, J. Zhou, A. Di Cicco, F. Baudelet, L. H. Tjeng, and Z. Hu, “Valence state of pb in transition metal perovskites pbtmo3 (tm= ti, ni) determined from x-ray absorption near-edge spectroscopy”, *physica status solidi (b)*, vol. 255, no. 6, p. 1 800 014, 2018.

- [8] **Y. Mijiti**, K. Chen, F. Choueikani, A. Di Cicco, and F. Baudelet, “Collapse of itinerant ferromagnetism in CoS₂ under pressure: An x-ray absorption spectroscopy study”, *Phys. Rev. B*, vol. 98, p. 184423, 18 Nov. 2018.

Declaration: *I hereby declare that all the information provided is true and correct. I also understand that any willful dishonesty may render for refusal of this application or immediate termination of employment.*

Yimin Mijiti

Date: 26/10/2020

Location: Camerino (MC, Italy)

Yimin Mijiti

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