

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

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

ACTIVITIES, ATTENDED SCHOOLS AND CONFERENCES

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

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 fluorecence (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 pbtm_3 (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. Baudalet, "Collapse of itinerant ferromagnetism in CoS_2 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)