

# ACHRAF ATILA

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Friedrich-Alexander-Universität Erlangen-Nürnberg, Materials Science and Engineering, Institute I, Martensstr. 5, Erlangen 91058, Germany

- EDUCATION**
- Ph.D. Student Friedrich-Alexander-University of Erlangen-Nürnberg,**  
Thesis: " Influence of the structure and topology on the deformation behavior and fracture of oxide glasses."  
Advisor: Prof. Dr.-Ing. Erik Bitzek
  - M2 University of Hassan II, Physics of Materials and Nanomaterials, 2017**  
Thesis: "Molecular dynamics simulation of the thermodynamic and structural properties of calcium aluminosilicate glasses."  
Advisors: Prof. Said Ouaskit, Prof. Abdellatif Hasnaoui
  - M1 University of Hassan II, Physics and New Technologies, 2016**
  - BS University of Hassan II, Physics and Applications, 2015**

- RESEARCH EXPERIENCE**
- Research Associate, Friedrich-Alexander-University of Erlangen-Nürnberg (2018 –)**
  - Teaching assistance, Friedrich-Alexander-University of Erlangen-Nürnberg (2018 – Present)**
    - Precourse MatLab/Octave and Linux
    - Introduction to atomistic simulation methods
    - Student exams supervision
  - Master Research Internship, Faculty of Sciences Ben M'SIK – (LPMC), CASABLANCA, 2017**  
Advisor: Prof. Said Ouaskit, Prof. Abdellatif Hasnaoui  
Project Title: "Molecular dynamics simulation of thermodynamics and structural properties of calcium aluminosilicate glasses."
  - Bachelor Internship Faculty of Sciences Ben M'SIK – (LPMC), CASABLANCA, 2015**  
Advisor: Prof. Mohamed Bennai  
Project Title: "Introduction to Quantum Information Processing."

## PUBLICATIONS

### *Published:*

- On the Presence of Nanoscale Heterogeneity in Ni<sub>15</sub>Co<sub>15</sub>Al<sub>70</sub> Metallic Glass Under Pressure. A. Atila, M. Kbirou, S. Ouaskit, A. Hasnaoui, *Journal of Non-Crystalline Solids*, 550, 120381 (2020), doi: 10.1016/j.jnoncrysol.2020.120381
- Atomic Structure and Modifiers Clustering in Silicate glasses: Effect of Modifier Cations. A. Atila (arXiv: 2007.09247)
- Ionic self-diffusion and the glass transition anomaly in aluminosilicates. A. Atila, S. Ouaskit, A. Hasnaoui, *Physical. Chemistry. Chemical. Physics.* 22 (30) (2020), pp. 17205-17212, doi: 10.1039/D0CP02910F
- Atomistic insights into the impact of charge balancing cations on the structure and properties of aluminosilicate glasses. A. Atila, M. Ghardi A. Hasnaoui, S. Ouaskit, *Physical. Review. B*, 100, 144109 (2019), doi: 10.1103/PhysRevB.100.144109
- Alumina effect on the structure and properties of calcium aluminosilicate in the percalcic region: A molecular dynamics investigation. A. Atila, M.Ghardi, A. Hasnaoui, S. Ouaskit, *Journal of Non-Crystalline Solids*, 525, 119470 (2019), doi: 10.1016/j.jnoncrysol.2019.119470
- Computational Insights into the Structure of Barium Titanosilicate Glasses. E.M. Ghardi, A. Atila, M. Badawi, A. Hasnaoui, S. Ouaskit, *Journal of American Ceramic Society*, 102, 6626 (2019), doi: 10.1111/jace.16536

### *In progress:*

- Atomistic insights into the structure and elasticity of densified 45S5 bioactive glass. Y. Ouldhnini\*, A. Atila\*, S. Ouaskit, A. Hasnaoui (submitted to PCCP)

## PRESENTATIONS, POSTERS, AND WORKSHOPS

IBM: ML0101EN, Machine Learning with Python: A Practical Introduction. 08.2020.

Talk, "Atomistic Study of Mechanical and Structural Anisotropy in Metaphosphate Glasses." USTV-DGG joint meeting, Orléans, France, 15-19.06.2020 (Cancelled due to COVID-19).

Poster, "Atomistic mechanisms of Crack Nucleation in Silicate Glasses." USTV-DGG joint meeting, Orléans, France, 15-19.06.2020 (Cancelled due to COVID-19).

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\* Joint first author

Poster, "Atomic-Scale Study of Deformation-Induced Topological Anisotropy in Silica and Metaphosphate Glasses." 4<sup>th</sup> Int. Workshop on Glass & Entropy, Jena, Germany, 9-12.09.2019.

Talk, "Atomistic Study of Mechanical and Structural Anisotropy of Metaphosphate Glasses." ISAM<sup>4</sup> Symposium, Erlangen, Germany, 5-8.08.2019.

Poster, "Mixed alkaline-earth effect in metaphosphate glasses". DGG conference, Nürnberg, Germany, 13-15.05.2019.

Poster, "Structural and mechanical properties of sodium, magnesium and calcium metaphosphate glasses: insights from molecular dynamics simulations." DPG spring meeting, Regensburg, Germany, on 1-5.04. 2019.

Poster, "Atomistic simulations of silica and metaphosphate glasses: mechanical properties and mechanically-induced structural anisotropy." SPP1594 Spring school "Glass under load" Dusseldorf, Germany, 19-22.02. 2019.

Poster, "The role of disorder in the BaO-TiO<sub>2</sub>-SiO<sub>2</sub> glass plasticity: a molecular dynamics study". 9<sup>ème</sup> Rencontre nationale des jeunes chercheurs en physique in Casablanca, Morocco on 27-29.12.2018.

Paris International School on Advanced Computational Material Science – PISACMS2018, Paris, France, 26.08-2.09.2018.

Poster, "Silica content effects on the elastic and structural properties of calcium aluminate glass: Insights from molecular dynamics." American Ceramic Society GOMD meeting in San Antonio, Texas, USA, 20-24.05.2018.

Oral, "Alumina content effect on thermodynamic mechanical and structural properties of calcium silicate glass: a molecular dynamics simulation." 6<sup>th</sup> International Conference Franco-Maghrebine on Nanomaterials for Energy and Environment (6<sup>CFMNEE</sup>), Casablanca, Morocco, 19-21.03.2018.

Poster, "Charge balancing cations effect on elastic moduli of aluminosilicate glasses revealed by molecular dynamics simulations." 6<sup>th</sup> International Conference Franco-Maghrebine on Nanomaterials for Energy and Environment (6<sup>CFMNEE</sup>), Casablanca, Morocco, 19-21.03.2018.

Poster, "Structural investigation of TiO<sub>2</sub> role in barium titanosilicate glasses: A molecular dynamics simulation". 6<sup>th</sup> International Conference Franco-Maghrebine on Nanomaterials for Energy and Environment (6<sup>CFMNEE</sup>), Casablanca, Morocco, 19-22.03.2018.

Poster, "Molecular dynamic study of the thermodynamic and structural properties of Calcium Aluminosilicate glass." 2<sup>sd</sup> International conference of functional materials and their technological applications (CIMFAT). Casablanca, Morocco, on 13.10.2017.

**PROFESSIONAL  
SERVICE**

**Member of the organization committee.**

6<sup>th</sup> International Conference Franco-Maghrebine on Nanomaterials for Energy and Environment (6'CFMNEE), 19-21.03.2018.

**Member of the organization committee.**

1<sup>st</sup> International Conference on Theoretical and High Energy Physics (ICTHP), 22-24.09.2016.

**REVIEWER**

Journal of Non-Crystalline Solids,  
Journal of Applied Physics,  
Applied Physics Letters,  
Journal of Physical Chemistry,  
Journal of Materials Science,  
Journal of Inorganic and Organometallic Polymers and Materials

**LANGUAGES**

**Arabic, French, English:** Full professional proficiency  
**German:** Beginner (A1 level, A2 in progress)

**COMPUTER  
SKILLS**

- **Programming:** FORTRAN, C/C++, Python, LATEX
- **Web:** HTML, CSS
- **Software:** MATLAB, MS Office
- **OS:** Windows, Linux (system administration)
- **Plotting:** GNU PLOT, Origin.
- **Simulations:** Classical MD (LAMMPS), Reactive MD.