

CURRICULUM VITAE

Yahya Al-Khatatbeh

Permanent address: Department of Basic Sciences/ King Abdullah II School of Engineering, Princess Sumaya University for Technology, Amman, Jordan

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Currently (2025-2026 academic year/Sabbatical leave): Department of Applied Physical Sciences/Jordan University of Science and Technology/ymalkhatatbeh@just.edu.jo

1. Education

- Ph.D. (Physics) 2010, New Mexico State University, Las Cruces, New Mexico, USA
- M.Sc. (Physics) 2008, New Mexico State University, Las Cruces, New Mexico, USA
- M.Sc. (Physics) 2001, University of Jordan, Amman, Jordan
- B.Sc. (Physics) 1998, Mutah University, Mu'tah, Jordan

2. Ph.D. Dissertation

High-Pressure Behavior of Transition-Metal Dioxides TiO_2 , ZrO_2 and HfO_2 as Determined by Synchrotron X-ray Diffraction and Density-Functional Theory, New Mexico State University, Las Cruces, New Mexico, USA.

3. Employment

Academic Positions

- Associate Professor, Department of Basic Sciences, Princess Sumaya University for Technology, Amman, Jordan
September, 2018 – present
- Assistant Professor, Department of Basic Sciences, Princess Sumaya University for Technology, Amman, Jordan
September, 2013 – September, 2018
- Visiting Faculty and Research Associate (Visiting Assistant Professor), Bard College at Simon's Rock, Great Barrington, Massachusetts, USA
September, 2011 – July, 2013
- Visiting Research Scholar, Department of Materials Science and Engineering, Rensselaer Polytechnic Institute, Troy, New York, USA (in collaboration with Bard College at Simon's Rock)
October, 2011 – July, 2013
- Postdoctoral Associate, Yale University, Department of Geology and Geophysics, New Haven, Connecticut, USA
September, 2010 – August, 2011
- Research Assistant, New Mexico State University, Department of Physics, Las Cruces, New Mexico, USA
May, 2006 – July, 2010
- Teaching Assistant, New Mexico State University, Department of Physics, Las

Cruces, New Mexico, USA

August, 2005 – May, 2006

- Instructor, Al-Hussein Bin Talal University, Department of Physics, Ma'an, Jordan
September, 2001 – August, 2005

Administrative Positions

- Chairman of Department of Basics Sciences, King Abdullah II School of Engineering, Princess Sumaya University for Technology, Amman, Jordan – September, 2017 – September, 2021.

4. Research Interests

- Using high-resolution synchrotron-based x-ray diffraction to determine crystal structure, phase transitions and equations of state of materials at high pressure
- Using the laser-heated diamond-anvil cell (LHDAC) to study the behavior of materials under extreme conditions
- Studying the effect of pressure and/or temperature on technologically important nanomaterials using synchrotron-based x-ray diffraction
- Using Raman spectroscopy to study the high-pressure behavior of materials
- Using density-functional theory based *ab-initio* computations in high pressure physics in conjunction with experiments
- Studying the mechanical strength of materials at high pressure using density functional theory
- Studying the structural, electronic and magnetic properties of two-dimensional materials using first-principles computational methods.
- Using Electron Back Scattered Diffraction (EBSD) to study the solidification textures in directionally solidified alloys and their deformation mechanism

5. Membership in Scientific Societies and Associations

- Member of Advanced Photon Source (APS) users group
- Member of Advanced Light Source (ALS) users group
- Member of Cornell High Energy Synchrotron Source (CHESS) users group
- Member of the Jordanian Physics Society

6. Honors and Awards

- Honored by the Jordanian Physics Society, Amman, Jordan, January 2023.
- Department of Physics Merit-Based award, New Mexico State University, USA, May, 2009.
- Graduate Assistantship award, Graduate School, New Mexico State University, USA, May, 2008.

7. Teaching Experience

- ***Undergraduate Courses***

Physics I, Physics II, Physics III, Electromagnetics I, Mathematical Physics I, Heat and Waves, Classical Mechanics, Properties of Matter, Physics Lab I, Physics Lab II, Electronics Lab, and other introductory courses for non-science students (General Science I and II), Basic Concepts in Chemistry.

8. Supervision of Graduate Research

Co-advisor for **Emad Bani Ali** from Mu'tah University/Master's student in Physics 2016-2018/Thesis title: "Field Emission from Carbon Nanotubes and its Potential Application as an Electron Source", thesis defense date: January, 2018.

9. Membership of Committees

- **National and International**

- Member of the organizing committee of the international conference "How to Change the World via Science", German Jordanian University/Madaba, Jordan, June 9-11, 2022
- Member of the organizing committee of "1st International Conference on Current Nanotechnology and its Applications" ICCNA-2018, Irbid, Jordan, April 10-12, 2018
- Member of the organizing committee of "International Conference on Advanced Materials" ICAM-2017, Irbid, Jordan, July 10-13, 2017
- Member of the organizing committee of "Jordanian Life Sciences for Sustainable Development", Amman, Jordan, April 27-29, 2017

- **University**

- Member of the Assurance Committee, Department of Basic Sciences, PSUT, 2021- present.
- Chair of the Admission Exam Committee at Princess Sumaya University for Technology, Amman, Jordan, 2020
- Chair of three hiring committees of new faculty applicants to PSUT.
- Member of the School Admission Committee, 2019-2021
- Member of The Strategic Plan and Quality Assurance Committee in King Abdullah II School of Engineering, 2020-2021
- Member of the Higher Education Committee, King Abdullah II School of Engineering, Princess Sumaya University for Technology, Amman, Jordan, September, 2018 - 2019
- Member of the Scientific Research Committee, King Abdullah II School of Engineering, Princess Sumaya University for Technology, Amman, Jordan, September, 2017 - 2018
- Member of the Admission Exam Committee at Princess Sumaya University for Technology, Amman, Jordan, 2017
- Member of the Social Committee at Princess Sumaya University for Technology, Amman, Jordan, 2014-2015

10. Professional and Scientific Meetings

Scientific Meetings Organized

- Sustainable Science and Development: Transforming Industries and Society, September 17-19, 2025, Irbid and Amman, Jordan.
- International Conference on Advanced Materials ICAM-2023, Irbid, Jordan, May 22-24, 2023
- The 1st International Conference for Science and Pharmacy, Mutah, Jordan, 26-28 October 2022.
- The international conference “How to Change the World via Science”, German Jordanian University/Madaba, Jordan, June 9-11, 2022
- 1st International Conference on Current Nanotechnology and its Applications ICCNA-2018, Irbid, Jordan, April 10-12, 2018
- International Conference on Advanced Materials ICAM-2017, Irbid, Jordan, July 10-13, 2017
- Jordanian Life Sciences for Sustainable Development, Amman, Jordan, April 27-29, 2017

Participation in Scientific meetings

1. *Sustainable Science and Development: Transforming Industries and Society, September 17-19, 2025, Irbid and Amman, Jordan.*
2. *The 1st International Conference for Science and Pharmacy, October 26-28 , 2022, Mutah, Jordan.*
3. *How to Change the World via Science, German Jordanian University/Madaba, Jordan, June, 2022.*
4. *Webinar entitled “Synchrotron Light: A Powerful Tool for Scientific Research”, the Association of Arab Universities in coordination with SESAME, December 16, 2021, Amman.*

5. الورشة العلمية الأردنية الحادية عشر لمستخدمي مركز السنكروترون (SESAME)/ اللجنة الوطنية الأردنية لمركز السنكروترون وبالتعاون مع مركز السنكروترون وبدعم من الجامعة الأردنية وجامعة الزيتونة/الجامعة الأردنية – عمان – الأردن، نيسان 2019.

6. *International Conference on Advanced Materials ICAM-2017, Jordan University of Science and Technology/Irbid, Jordan, July, 2017.*
7. *Frontiers in Theoretical and Applied Physics FTAPS-2017, American University of Sharjah/Sharjah, UAE, February, 2017.*
8. *12th SESAME Users' Meeting, Amman, Jordan, November, 2014.*
9. *Building International Networks for Enhancement of Research in Jordan, Princess Sumaya University for Technology, Amman, Jordan, April, 2014.*
10. *Consortium for Materials Properties Research in Earth Sciences (COMPRES) Annual Meeting, Williamsburg, Virginia, USA, June, 2011.*

11. *Stewardship Science Academic Alliances (SSAA) Symposium*, Washington, DC, USA, February, 2011.
12. *American Geophysical Union Fall Meeting*, San Francisco, California, USA, December, 2010.
13. *American Physical Society March Meeting*, Portland, Orlando, USA, March, 2010.
14. *Graduate Research and Arts Symposium*, NMSU, Las Cruces, New Mexico, USA, March, 2010.
15. *Stewardship Science Academic Alliances (SSAA) Symposium*, Washington, DC, USA, January, 2010.
16. *American Geophysical Union Fall Meeting*, San Francisco, California, USA, December, 2009.
17. *Mineralogical Society of America Short Course: Theoretical and Computational Methods in Mineral Physics*, Berkeley, California, USA, December, 2009. **Workshop.**
18. *Laser Heating the diamond anvil cell (DAC): Where we are and where we are going*, Berkeley, California, USA, December, 2009. **Workshop.**
19. *Graduate Research and Arts Symposium*, New Mexico State University, Las Cruces, New Mexico, USA, April, 2009.
20. *American Physical Society March Meeting*, Pittsburgh, Pennsylvania, USA, March, 2009.
21. *Carnegie/DOE Alliance Center workshop*, Argonne National Laboratory, Illinois, USA, February, 2009. **Workshop.**
22. *American Geophysical Union Fall Meeting*, San Francisco, California, USA, December, 2008.
23. *Fourth Jordanian workshop on Synchrotron Radiation Applications*, University of Jordan, Amman, Jordan, June, 2008. **Workshop.**
24. *Graduate Research and Arts Symposium*, New Mexico State University, Las Cruces, New Mexico, USA, April 2008.
25. *American Geophysical Union Fall Meeting*, San Francisco, California, USA, December, 2007.
26. *National School on X-ray and Neutron Scattering*, Argonne National Laboratory, Illinois, USA, August, 2007. **Workshop.**
27. *Graduate Research and Arts Symposium*, New Mexico State University, Las Cruces, New Mexico, USA, April, 2007.
28. *American Physical Society March Meeting*, Denver, Colorado, USA, March, 2007.
29. *American Physical Society Four-Corners Meeting*, Logan, Utah, USA, October, 2006.

11. Publications

1. Shultaf, R., Mahmoud, N. T., **Al-Khatatbeh, Y.**, Tarawneh, K., *Ab initio study of structural, electronic, vibrational, and dielectric properties of Elpasolite*, **Accepted**.
2. **Al-Khatatbeh, Y.** and Tarawneh, K.; *Ultrahigh Pressure Phase Stability of AlB_2 -type and CaC_2 -type Structures with respect to Fe_2P -type and Ni_2In -type Structures of Zirconia*; Scientific Reports, 2023, 13, 17333.
3. **Al-Khatatbeh, Y.**, Tarawneh, K, and Alsaad, A. M.; *Prediction of a reentrant phase transition behavior of cotunnite in zirconia and hafnia at high pressures*, Journal of Superhard Materials, 2023, 45 (1), 10-19.
4. Tarawneh, K. and **Al-Khatatbeh, Y.**; *Adsorption of 3d transition-metal atoms on two-dimensional penta-graphene: A first-principles study*; Journal of Saudi Chemical Society, 2023, 27 (2), 101611.
5. Tarawneh, K. and **Al-Khatatbeh, Y.**; *Phase Relations of Ni_2In -Type and CaC_2 -Type Structures Relative to Fe_2P -Type Structure of Titania at High Pressure: A Comparative Study*; Crystals, 2023, 13, 9.
6. Tarawneh, K., Shukri, A.A., and **Al-Khatatbeh, Y.**; *Ab Initio Investigation of Boron- and Nitrogen-Doped Penta-Graphene in the Presence of a Vacancy Defect*; Journal of Electronic Materials; 2023, 52, 1990–1998.
7. **Al-Khatatbeh, Y.**, Tarawneh, K, Al-Taani, H, and Lee, K. K. M.; *Theoretical and experimental evidence for a post-cotunnite phase transition in hafnia at high pressures*, Journal of Superhard Materials, 2018, 40 (6), 374–383.
8. **Al-Khatatbeh, Y.**, Tarawneh, K, and Hamad, B; *The prediction of a new high-pressure phase of hafnia using first-principles computations*, IOP Conference Series: Materials Science and Engineering, 305, 2018, 012006.
9. Al-Taani,H, Tarawneh, K, **Al-Khatatbeh, Y.**, and Hamad, B; *The high-pressure stability of Ni_2In -type structure of ZrO_2 with respect to OII and Fe_2P -type phases: A first-principles study*, IOP Conference Series: Materials Science and Engineering, 2018, 305, 012016.
10. **Al-Khatatbeh, Y.** and Lee, K. K. M.; *From superhard to hard: A review of transition metal dioxides TiO_2 , ZrO_2 , and HfO_2 hardness*, Journal of Superhard Materials, 2014, 36 (4), 231-245.
11. Bergman, M. I., **Al-Khatatbeh, Y.**, Lewis, D. J., and Shannon, M. C.; *Deformation of directionally solidified alloys: evidence for microstructural hardening of Earth's inner core?*, Comptes Rendus Geoscience, 2014, 346, 140-147.
12. **Al-Khatatbeh, Y.**, Bergman, M. I., Lewis, D. J., Mason, Z., Zhu, L, and Rosenstock, S.; *Annealing of directionally solidified alloys revisited: No loss of solidification texture in Earth's inner core*, Physics of the Earth and Planetary Interiors (PEPI), 2013, 223, 32-39.

13. **Al-Khatatbeh, Y.**, Lee, K. K. M., and Kiefer, B; *Compressibility of nanocrystalline TiO₂ anatase*, Journal of Physical Chemistry C, 2012, 116 (40), 21635-21639.
14. **Al-Khatatbeh, Y.**, Lee, K. K. M., and Kiefer, B; *Phase diagram up to 105 GPa and mechanical strength of HfO₂*, Physical Review B, 2010, 82, 144106.
15. **Al-Khatatbeh, Y.**, Lee, K. K. M., and Kiefer, B; *Phase relations and hardness trends of ZrO₂ phases at high pressure*, Physical Review B, 2010, 81, 214102.
16. **Al-Khatatbeh, Y.**, Lee, K. K. M., and Kiefer, B; *High-pressure behavior of TiO₂ as determined by experiment and theory*, Physical Review B, 2009, 79, 134114.
17. *Electronic and Structural Distortions in Penta-Graphene Induced by the Stone-Wales Defect and Boron/Nitrogen Doping: A Density-Functional Theory Study*, To be submitted.

12. Participation in or organization of curricular and/or extra-curricular activities

- **Journal reviewer** for the following journals: American Mineralogist, Physics and Chemistry of Minerals Journal of Physical Chemistry C, Jordan Journal of Biological Sciences, Journal of Physical Chemistry Letters, Jordan Journal of Physics, Scientific Reports, and G-Cubed/ American Geophysical Union, Acta Crystallographica Section B, Solid State Communications.
- **External examiner** for Master theses defense in physics at the University of Jordan (April, 2015), the Hashemite University (April, 2018 and August, 2020) and Al Al-Bayt University (July, 2019 and June, 2022).
- **Advisor** of the Antares Astronomy Club at PSUT since October 2022.
- **Member** of the Scientific Research Committee/ King Abdullah II School of Engineering/ PSUT, September, 2017 – September, 2018.
- **Active Member** of the Jordanian Physics Society since 2013.
- In addition to the scientific meetings I organized and/or participated in, I have also attended the following scientific meetings:
 - The International Conference for Advanced Materials/Jordan University for Science and Technology, Irbid, Jordan, April 27-29, 2015
 - 8th International Petra School of Physics/Amman, Jordan/the University of Jordan, Amman, Jordan, April 11-14, 2016
 - 9th International Petra School of Physics “Nano Physics: Fundamentals and Applications”/Amman, Jordan/the University of Jordan, Amman, Jordan, October 09-12, 2018
- **Council Secretary** at Princess Sumaya University for Technology of:
 - King Abdullah II School of Engineering, 2014-2015.
 - Department of Basic Sciences, 2014-2015.
- **Member** of the Social Committee at Princess Sumaya University for Technology, 2014-2015.

References

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