

CURRICULM VITAE

Mouath Ghazi Shatnawi

PERSONNEL

Date of Birth: 08/23/1973

Work Address:

Department of Physics

Hashemite University

Zarqa, Jordan

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Education:

2001- 2007

Michigan State University, USA

Doctor of Philosophy (Physics)

Thesis title: **Local structure of Intercalants and Host
Nanoporous Materials**

Research Experience:

- X-ray diffraction
- Pair Distribution Function analysis and development
- Parametric studies using PDF method
- Structure solution of materials
- Nanoporous and nanostructured materials analysis

1996-2000

Al alBayet University, Jordan

Master degree of Arts and Science (*physics*):

Thesis Title: **Relaxation Mechanisms at low
Temperatures for fine magnetic particle
systems**

Research Experience:

- Relaxation mechanisms (Macroscopic Quantum tunneling and thermal relaxation)
- Modeling of magnetic loops
- Use Fortran to construct physical models

1991- 1995

Yarmouk University, Jordan

Bachelor of Science (*physics*)

Appointments:

- **Associated professor at Hashemite university from 2016-now**
- **Chairman of physics department at Hashemite university 2022-2023**
- **Assistant professor at Hashemite university from 2007-2016**
- **Visiting professor at Columbia university for three months in 2013**
- **Teaching Assistance at Al alBayet university (Jordan) 2000-2001:**
 - Teaching first year undergraduate physics courses
 - Teaching some labs
- **Teaching and research assistance at Michigan State University 2001-2007**

Experimental Skills

- Atomic Pair Distribution Function method applied to complex materials
- X-ray powder diffraction
- Solid state synthesis
- Vibrating sample magnetometer through using Physical Properties Measurement System (PPMS)
- Various data processing and analysis software experience (GSAS, PDFFIT, PDFgetN/X, DISCUS)

Teaching Experiences

➤ Undergraduate Courses:

- Phys. 101: General Physics I (Science and Engineering students)
- Phys. 102: General Physics II (Science and Engineering students)
- Phys. 109: General Physics III (Medical students)
- Phys. 261: Modern Physics (I)
- Phys. 262: Modern Physics (II)
- Phys. 341: Thermodynamics
- Phys. 371: Materials Physics
- Phys. 371: Electricity and Magnetism (I)
- Phys. 372: Electricity and Magnetism (II)
- Phys. 411: Advanced Laboratory II (different experiments on modern and advanced physics)
- Phys. 471: Solid State Physics
- Phys. 442: Statistical Physics
- Phys. 491 Seminar (student graduation projects)

➤ Graduate Courses:

- Phys. 751: Classical Mechanics
- Phys. 771: Solid State Physics

Fellowships:

1. June 11, 2011- September 12, 2011, International Atomic Energy Agency (IAEA) fellowship, Vienna, Astoria in collaboration with the Brookhaven National Laboratory, New York, USA.
2. June 11, 2013- August 26, 2013, International Atomic Energy Agency (IAEA) fellowship, Vienna, Astoria in collaboration with the Brookhaven National Laboratory, New York, USA.

Current research work:

My current research focuses on investigating magnetic and structural properties of materials including nanoporous materials and dilute magnetic semiconductors:

- Nanoporous materials:
 - Nanoporous carbon (NPC): Implementing the pair distribution functions method to study the effect of the pyrolyzation temperature on the structure of the (NPC) as well as the effect of the preparation method (different precursor) on the structure of the NPC.
- Dilute Magnetic Semiconductors: Dilute magnetic semiconductors (DMS) has potential applications besides to the scientific implication in compromising both properties of electron (spin and charge). These materials are fabricated by doping semiconductors with magnetic and nonmagnetic elements. Structural, Optical and Magnetic properties are investigated to understand the DMS properties by implementing different experimental techniques such as XRD, XPS, UV-VIS spectroscopy, VSM.

Publications:

1- Role of defects in tailoring optical, electronic, and luminescent properties of Cu-doped ZnO film. M Barhoush, AKM Alsmadi, B Salameh, M Shatnawi, G.A. Alna'washi, Ceramics International 49 (20), 32538-32548

2- Investigation on X-ray photoelectron spectroscopy, structural and low temperature magnetic properties of Ni-Ti co-substituted M-type strontium hexaferrites prepared by ball milling technique, G.A. Alna'washia, A.M. Alsmadi, I. Bsoul, B. Salameh, Gasseem M. Alzoubi, M. Shatnawi, S.M. Hamasha, S.H. Mahmood, Results in Physics, 28, 2021, 104574

3- Influence of Oxygen Defects and Their Evolution on the Ferromagnetic Ordering and Band Gap of Mn-Doped ZnO Films, Abdel Khaleq Mousa Alsmadi, Belal Salameh, and Mouath Shatnawi, J. Phys. Chem. C, 124, 2020, 16116-16126

4- Influence of nickel doping on the energy band gap, luminescence, and magnetic order of spray deposited nanostructured ZnO thin films, Ali, H., Alsmadi, A. M., Salameh, B., Mathai, M., Shatnawi, Hadia, N. M. A., & Ibrahim, E. M. M, Journal of Alloys and Compounds 816 (2020): 152538

5- Effects of Co concentration and annealing on the magnetic properties of Co-doped ZnO films: Role of oxygen vacancies on the ferromagnetic ordering, Journal of Alloys and Compounds, B.Salameh, A.M.Alsmadi, M.Shatnawi, 835,15, 2020, 155287

6- Influence of High-Temperature Annealing on Structural and Magnetic Properties of Crystalline Cobalt Ferrite Nanoparticles in the Single-Domain Regime, Gassem M. Alzoubi, B. A. Albiss, M. Shatnawi, I. Bsoul, A. M. Alsmadi, B. Salameh & G. A. Alna'washi, Journal of Superconductivity and Novel Magnetism, 33, 3179–3188 (2020)

7- Coexistence of superparamagnetism and spin-glass like behavior in zinc-substituted cobalt ferrite nanoparticles, Gassem M. Alzoubi, A. M. Alsmadi, G. A. Alna'washi, B. Salameh, M. Shatnawi, Sufian Alnemrat, B. A. Albiss & I. Bsoul, Appl. Phys. A, 126, 512 (2020)

8- Nonpercolative nature of the metal-insulator transition and persistence of local Jahn-Teller distortions in the rhombohedral regime of $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$, Emil S. Bozin, J. F. Mitchell, Simon J. L. Billinge, Physical Review B, **93** (2016), 165138-165148

9- Magnetic Influence of Mn doping on the magnetic and optical properties of ZnO nanocrystalline particles Mouath Shatnawi, Abdel Alsmadi, I. Bsoul, B. Salameh, M. Mathai, G. Alnawashi, Gassem M. Alzoubi, F. Al-Dweri, M. S. Bawa'aneh, Results in physics, 6,2016,1064-1071

10- Magnetic and optical properties of Co-doped ZnO nanocrystalline particles M. Shatnawi, A.M. Alsmadi , I. Bsoul , B. Salameh, G.A. Alna'washi, F. Al-Dweri, F. El Akkad, Journal of Alloys and Compounds 655 (2016) 244-252

11- Thermodynamics of a repulsive and attractive harmonically-trapped one-dimensional atomic Bose gas, M.K. Al-Sugheir and F.M. Al-Dweri and G. Alna'washi and M.G. Shatnawi, Physica B: Condensed Matter, 408(2013), 0921-4526

12- Bose- Einstein Condensation of Hard Sphere Homogeneous Gas in Static Fluctuation Approximation, M. K. Al-Sugheir, S. S. Gasmeh, M. Shatnawi and M. S Bawa'aneh,Acta Physica Polonica A, **116**, 154 (2009).

13- Multistream instability in two and three-species plasmas, M.S. Bawa'aneh, Ghada Assayed, Mouath Shatnawi, Ghassan Alna'washi and S. Al-Awfi, Jordan Journal of Physics, **2**(2), 113 (2009).

14- Structural characterization of the clay mineral illite-1M, A. F. Gualtieri, S. Ferrari, M. Leoni, G. Grathoff, R. Hugo, M. Shatnawi, G. Paglia and S. Billinge. *J. Appl. Cryst.* (2008). **41**, 402-415

15- Structure Study of novel alkali metal intercalated silica gel materials with potential as hydrogen source Mouath Shatnawi, G.paglia, J.L. Dye, S. J. L. Billinge, *J. Am. Chem. Soc.*, 129 (5), 1386 -1392 (2007)

16- Mercury Binding Sites in Thiol-Functionalized Mesostructured Silica. Simon J. L. Billinge, Emily J. McKimmy, Mouath Shatnawi, HyunJeong Kim, Valeri Petkov, Didier Wermeille, and Thomas J. Pinnavaia. *J. Am. Chem. Soc.*, **127** (23), 8492 -8498 (2005).

17- Modeling of interaction effects in granular systems. El-Hilo M., Shatnawi M., Al-Rsheed A. *Journal of Magnetism and Magnetic Materials*, 221 (1), 137-148 (2000).