



Mahmoud Abu Samak C.V



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Mahmoud Khaled Abu-Samak

October 2022



PERSONAL

Place of Birth Jordan
Date of Birth 1967
Marital Status Married
Nationality Jordanian
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ACADEMIC QUALIFICATIONS

1992 - 1996 **Ph.D.**, Solid state Physics, University of Rajasthan, Jaipur, INDIA
1989 - 1992 **M.Sc.**, Physics, The University of Kashmir, J and K, INDIA
2001 - 2005 **B.Sc.**, Physics, The University of Gujarat, Gujarat, INDIA

SPECIALTY

General Specialization: Physics
Specialization : Solid state physics



CAREER HISTORY

- March 2022- present **Professor**, Department of Physics, College of Science, Al-Hussein Bin Talal University, Ma'an, Jordan
- September 2004 -2021 **Associate Professor**, Department of Physics, College of Science, Al-Hussein Bin Talal University, Ma'an, Jordan.
- September 2010 - 2015 **Associate Professor**, Department of Physics, Faculty of Science, Al Baha University, Baha, Saudi Arabia
- September 1997 - 2004 **Assistant Professor**, Faculty of science, Science departments, **Al-Zaytoonah Jordanian Private University**, Amman, Jordan
- September 1999 - 2000 **Visiting Scientist**, Istituto Nazionale per la Fisica della Materia INFN National Center on nanoStructures and bioSystems at Surfaces (S³), via G. Campi 213/A, I-41100 Modena, Italy
Dept. of Physics, University of Modena e Reggio Emilia Modena, Italy
- February 2008 **Visiting Professor/Scientist**, Department of Physics and Engineering Physics, **University Of Saskatchewan, SK, CANADA**

ADMINISTRATIVE EXPERIENCE

Positions

- September 1997 - 2004 Chairman of basic sciences, College of Science, Al-Zaytoonah university, Amman, Jordan

Committees



HONORS, SCHOLARSHIPS, AWARDS AND GRANTS _____

- | | |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1993 | JRF (junior research fellowship) from UGC -India |
| 1994-1996 | SRF (Senior Research Fellowship) from UGC-India |
| 1996-1997 | Research Associate Fellowship from European countries union (ECU). |
| 1999-2000 | TRIL (Training and Research in Italian Laboratory) ICTP-Italy |
| 2007 | IAEA/SESAME (International Atomic Energy Agency) fellowship (CLS Canadian Light source CANADA and ALS Advance Light Source Berkley , and Stanford light source SLAC (USA) |

PROFESSIONAL MEMBERSHIPS AND SERVICES _____

Membership(s)

- EXAFS Society
- Indian Physical society

Service(s)

RESEARCH INTEREST _____

We are studying the electronic structures of new and advanced materials. We are using synchrotron radiation to perform soft x-ray emission and absorption spectroscopy of systems like biomaterials, superconductors and transition metal compounds. The AREAS OF INTEREST are:

- 1) Surface Science/ Low- dimensional and nano physics
- 2) Semiconductors and Superconductors.
- 3) Synchrotron Radiation Facilities.



- 4) UV Photoemission Spectroscopy.
- 5) X-ray Photoemission Spectroscopy.
- 6) X-ray Absorption Spectroscopy.
- 7) X-ray emission Spectroscopy.
- 8) High Temperature Superconductors.
- 9) Ultra-High Vacuum (UHV) Systems.

PUBLICATIONS

Peer-reviewed journal articles

1. Explore the charge transfer and d-d excitation in perovskite manganite using 2p3d resonant inelastic X-ray scattering, Rezq Naji Aljawfi, **Mahmoud Abu-Samak**, Shalendra Kumar, Aga Shaheer, Mohamed A. Swillam, *Journal of Alloys and Compounds* **904 (2022) 164020**
<https://doi.org/10.1016/j.jallcom.2022.164020>
2. RIXS, XES and XAS studies for electronic structure of rare earth and alkaline earth modified manganite, M. Abu-Samak, Upendra Kumar, A. M. Quraishi, Rajneesh Kumar, Shalendra Kumar, S. Dalela, M. Ayaz Ahmad, B. L. Choudhary, P. A. Alvi, *physica B* **2021**
<https://doi.org/10.1016/j.physb.2021.413562>
3. Electronic structure and energy gaps evaluation of perovskite manganite single crystals using XES and XAS spectroscopy, **Mahmoud Abu-Samak**, Shalendra Kumar b,c, Rezq Naji Aljawfi, Mohamed A. Swillam, *Journal of Electron Spectroscopy and Related Phenomena* **Volume 250, July 2021, 147084**
doi.org/10.1016/j.elspec.2021.147084
4. Experimental and DFT investigation of electronic structure and ferromagnetic stable state in pristine and Mn: SnO₂ NPs Rezq Naji Aljawfi, **M. Abu-Samak**, Shalendra Kumar, Mohamed A. Swillam, *Vacuum* **Volume 179, September 2020, 109536**
doi.org/10.1016/j.vacuum.2020.109536
5. Electronic structure and spontaneous magnetization in Mn-doped SnO₂, Rezq Naji Aljawfi, **Mahmoud Abu-Samak**, Mohammed A. Swillam, Keun Hwa Chae, Shalendra Kumar, and John A. McLeod, *J. Appl. Phys.* **128, 045705 (2020)**
doi.org/10.1063/5.0012415
6. Engineering the Optical properties of Cu doped CeO₂ NCs for Application in white LED Kavita Kumari, Rezq Naji Aljawfi, A. K. Chawla, Rajesh Kumar, P. A. Alvi, Adil Alshoaibi, Ankush Vij, Faheem Ahmed, **M. Abu-samak**, Shalendra Kumar, *Ceramics International* **46 (2020) 7482–7488**
doi.org/10.1016/j.ceramint.2019.11.246
7. Optical Gain Characteristics of a Novel InAlAs/InGaAs/GaAsSb Type-II Nano-Heterostructure. A. M. Khan¹, Meha Sharma, M. I. Khan, Sandhya Kattayat, Garima Bhardwaj, M. Abu-Samak, S. H. Saeed¹, P. A. Alvi, *Optik* **Volume 183, (2019), (842-848)**
doi.org/10.1016/j.ijleo.2019.01.095
8. Study of Band Structure Properties of Pnictide LaO_{1-x}F_xFeAs (x = 0, 0.2) Superconducting Compound. Neena D. · K. B. Garg · P. A. Alvi · D. Kumar, Kavita Jerath, M. Abu-Samak, S. Dalela *J Supercond Nov Magn* **27 (2014) 1967–1972**



- doi.org/10.1007/s10948-014-2539-7
9. Effect of thermal annealing on some electrical properties and optical band gap of vacuum evaporated $\text{Se}_{65}\text{Ga}_{30}\text{In}_5$ thin films. Mousa M.A. Imrana, Omar A. Lafia, **M. Abu-Samak** *Vacuum* **86**, (2012), **1589–1594**
doi.org/10.1016/j.vacuum.2012.03.021
 10. Valence Structure of Alkaline and Post-Transition Metal Oxides John A. McLeod, Robert J. Green, Nikolay A. Skorikov, L. D. Finkelstein, **Mahmoud Abu-Samak**, Ernst Z. Kurmaev, and Alexander Moewes *Proc. of SPIE Vol. 7940, 79400R* · © (2011)
doi.org/10.1117/12.881181
 11. Correlation effects in Ni 3d states of LaNiPO A. V. Lukoyanov, S. L. Skornyakov, J. A. McLeod, **M. Abu-Samak**, R. G. Wilks, E. Z. Kurmaev, Moewes, N. A. Skorikov, Yu. A. Izyumov, L. D. Finkelstein, V. I. Anisimov, and D. Johrendt *Phys. Rev. B* **81** (2010)235121
doi.org/10.1103/PhysRevB.81.235121
 12. Band gaps and electronic structure of alkaline-earth and post-transition-metal oxides J. A. McLeod, R. G. Wilks, N. A. Skorikov, L. D. Finkelstein, **M. Abu-Samak**, E. Z. Kurmaev, and A. Moewes *Phys. Rev. B* **81** (2010) 245123
[10.1103/PhysRevB.81.245123](https://doi.org/10.1103/PhysRevB.81.245123)
 13. Quantum size effects in Bi films grown on GaAs (110) **Mahmoud Abu-Samak. J. Appl. Phys.** **104** (2008) 123714
doi.org/10.1063/1.3046543
 14. Photoemission Study of Pseudomorphic Growth of Alpha-Sn on InSb Surfaces **Mahmoud Abu-Samak. IREPHY International Review of Physics** 1. N.4 (2007) 45-49
 15. Photoemission and low-energy electron-diffraction studies of α -Sn growth on InSb surfaces **Mahmoud Abu-Samak**, P. Fantini, S. Gardonio, E. Magnano, C. Mariani, *Physica scripta.* **71** (2005) 652-655
doi.org/10.1088/0031-8949/71/6/013
 16. α -Sn pseudomorphic growth on InSb (111) and (111) surfaces: a high resolution photoemission study , **Mahmoud Abu-Samak** .Muta lil-Buhuth wad-*dirasat* 20 (2005) 101-115
 17. X-ray absorption study of the $(\text{Y}_{1-x}\text{Pr}_x)\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$ system S. J. Gurman, J C Amiss, **M Khaled**, N L Saini, and K B Garg. *J. Phys: Condens. Matter* **11** (1999), 1847-1859.
doi.org/10.1088/0953-8984/11/7/014
 18. XPS study of Tc-depression and M-I transition in $\text{Bi}_2\text{Sr}_2\text{Ca}_{1-x}\text{Cu}_2\text{O}_y$. **Mahmoud Khaled**, P. Srivastava, B. R. Sekhar, K. B. Garg, S. K. Agarwal, A. V. Narlikar, and F. Studer . *J. of phys & chem. of solids*, **5** (1998) 777-782.
[doi.org/10.1016/S0022-3697\(97\)00134-0](https://doi.org/10.1016/S0022-3697(97)00134-0)
 19. Investigation of Pr valence and site occupancy in $(\text{Y},\text{Pr})\text{BCO}$ BY X-ray photoemission. **M. Khaled**, B. R. Sekhar, P. Srivastava, K. Kumari, and K. B. Garg *Phys. Status solidi A* 162 (1997) 643-648.
[doi.org/10.1002/1521-396X\(199708\)162:2<643::AID-PSSA643>3.0.CO;2-M](https://doi.org/10.1002/1521-396X(199708)162:2<643::AID-PSSA643>3.0.CO;2-M)



20. EXAFS and XANES study of structural and electronic changes in $Y_{1-x}Pr_xBa_2Cu_3O_7$. **M. Khaled**, N. L. Saini, S. J. Gurman, J. C. Amiss, and K. B. Garg. **J. Phys IV France 7 (1997) C2-1121**.
21. X-ray absorption study at Pr L3 edge in (Y,Pr)Ba₂Cu₃O₇ Systems. **M. Khaled**, N. L. Saini, K. B. Garg, and F. Studer. **Solid State. Comms.100 (1996)**. 773
[doi.org/10.1016/S0038-1098\(96\)00513-3](https://doi.org/10.1016/S0038-1098(96)00513-3)
22. XAFS study of Ce valence in the Ce_{1-x}Y_xFe₂ system; K B Garg, M. Khaled, S. Venkatesh, F. Studer, N. H. Duc, and P. Srivastava. **Physica B 208 &209(1995)** 525-527
[https://doi.org/10.1016/0921-4526\(94\)01037-2](https://doi.org/10.1016/0921-4526(94)01037-2)
23. Scanning tunneling microscopy of Si/SiO₂ interface roughness and its dependence on growth conditions; **G. S. Shekhawat**, Ram P. Gupta, S. S. Shekhawat, D. P. Runthala, P. D. Vyas, P. Srivastava, S. Venkatesh, K. Mamhoud, K. B. Garg **Appl. Phys. Lett. 68(1)(1996)** 114-116.
DOI:10.1063/1.116774
24. A Photoemission study of the influence of sputtering on Au-Bi(2212) interface; P. Srivastava, N L Saini, B R Sekhar, S Venkatesh, **M. Khaled**, S K Sharma, K B Garg, A Agarwal, Ram p Gupta, W S Khokle, H Ohkubo, and M Akinaga . **Supercond. Sci Technol 7(1994)940**.
doi.org/10.1088/0953-2048/7/12/010

Books and book chapters

1. **Mahmoud Abu-Samak** and M. Shaderma "Electrical and Electronic circuit's analysis". Al Quds open university publication 2007,
2. **Mahmoud Abu-Samak** and M. Shaderma "Introduction to electronics", first edition. Al Quds open university publication 2006.

Patents

- N.A.

CONFERENCES AND PROCEEDINGS

1. A Comparative Study on Optical Characteristics of InGaAsP QW Heterostructures of Type-I and Type-II Band Alignments, G Bhardwaj, K Sandhya, R Dolia, M Abu-Samak, S Kumar, PA Alvi
Bulletin of Electrical Engineering and Informatics 7 (1), 25-41
2. Optimization of AlGaN QW Heterostructure for UV Applications, R Dolia, M Abu-Samak, PA Alvi, Engineering Vibration, Communication and Information Processing, 9-14



3. Simulating 1.55 μm Optical Gain in Type-II InAlAs/InGaAs/GaAsSb Nanoscale Heterostructure
AM Khan, G Bhardwaj, M Abu-Samak, SH Saeed, PA Alvi, IOP Conference Series: Materials Science and Engineering 594 (1), 012003
4. SSRL School on Synchrotron X-Ray Absorption Spectroscopy Techniques, Stanford synchrotron radiation Laboratory, California CA, May 20-22, 2008.
5. The second National workshop on synchrotron users (**SESAME**) held at Jordan University, Jordan, May 10/5/2007.
6. The first National workshop on synchrotron users (**SESAME**) held at Jordan University, Jordan, May 10/5/2006.
7. "LEED, HREELS and photoemission studies of Pseudomorphic growth of alpha-Sn on InSb surfaces", workshop on physics of semiconductor science (WPSS'04) Lattakia- Syria, May 9-11-2004.
8. "Screw dislocation mediated growth and surface composition of c-axis oriented High Tc superconducting thin film: Scanning Tunneling Microscopy and X-ray Photoemission Spectroscopy" (published in ICITNS October 2003).
9. "Pseudomorphic growth of **alpha-Sn** on low-index InSb surfaces", (published in ICITNS October **2003**, conference at Al-Zaytoonah University, Amman, Jordan).
10. "Density of states of two-dimensional electron gas at semiconductor surfaces", 24th Annual meeting Advances in Surface and Interface Physics and Special Session of INFM Section F with the Synchrotron Light Committee, Dipartimento di Fisica, Modena (Italy), December 20-21.
11. "Investigation of Silver-YBCO interface by XPS and Electrical Measurements", MRS 1995 Spring Meeting held in San Francisco from 18-20 April, 1995.
12. "Pseudomorphic growth of alpha-Sn on low-index InSb surfaces. Sandra Gardonio, Paolo Fantini, 24th Annual meeting Advances In Surface and Interface Physics and Special Session of INFM Section F with the Synchrotron Light Committee, Dipartimento di Fisica, Modena (Italy), December 20-21, 1999.
13. "Characterization of Air formed Oxide Films on Amorphous Ti60Ni40 by EPS", Procd, 37 DAE-SSP Symp. 1994, p. 457.
14. "AFM & STS Studies of Bi-2212 Single Crystals", Procd. 37 DAE-SSP Symp. 1994, p.383

TEACHING

Courses Taught-undergraduate



Mahmoud Abu Samak C.V



Solid state physics I,II, Electronic, **Digital Electronics** , **Electrical and Electronic circuit's analysis** , Mathematical Physics I &II, Electromagnetic I & II, Classical Mechanics I & II, Electrodynamics, Modern physics, Quantum physics I & II, General Physics 101, General Physics 102, , Thermodynamics, , Heat and Waves. Low temperature physics, Superconductivity,

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Courses Taught-postgraduate

- Solid state Physics

SKILLS

Languages

- Arabic (native)
- English (excellent)
- Italian
- Hindi (ordu)