

Aurangzeb Khan, Ph. D

Postdoctoral Research Scholar,
Biomimetic Nanoscience and Nanoscale Technology Program (BNNT)
233 Clippinger, Chemistry building,
Ohio University, Athens OH 45701
khan@phy.ohiou.edu

EDUCATION

- **2006-Ph.D.** Physics (Nanosciences, Nanotechnology), Ohio University, Athens, OH
Dissertation: Synthesis, Characterization, and Luminescence Properties of Zinc Oxide Nanostructures.
Advisor: Professor Martin E. Kordesch
- **2003-M.S.**, Physics, Ohio University, Athens, OH, USA (www.ohiou.edu).
- **1998-Advanced Teaching Diploma**, Staff Training Institute, University Of Peshawar.
(One-year course on pedagogical uses of technological facilities and packages)
- **1995-B.Sc/MSc (4-year) (GOLD MEDAL, FIRST CLASS FIRST POSITION)** Physics,
University of Peshawar, Pakistan. (www.upesh.edu.pk).

TEACHING/RESEARCH EXPERIENCE

- **Postdoctoral Research Scholar [March 2009-Present];**
Biomimetic Nanoscience and Nanoscale Technology Program (BNNT) Ohio University,
Athens OH 45701
- **Senior Lecturer/Faculty of Physics [July 2007-March2009];**
Department of Physics, University of Peshawar, Pakistan
- **Postdoctoral Research Scholar [Sep 2006-July2007];**
Biomimetic Nanoscience and Nanoscale Technology Program (BNNT) Ohio University,
Athens OH 45701
- **Research Assistant [2003-2006];**
Department of Physics and Astronomy, Ohio University, Athens, OH, USA
- **Teaching Assistant [2001-2003];**
Department of Physics and Astronomy, Ohio University, Athens, OH, USA
 - Taught physics laboratories and CAPA help sessions, 100, 200, 250 series level, for physics and engineering majors.
 - Taught physics courses on problem solving skills. Wrote and graded quizzes.
- **Lecturer/Faculty of Physics [1995-2000];**
Department of Physics, University of Peshawar, Peshawar, NWFP, Pakistan
 - I taught physics courses at 100, 200, 300 and 400 level as well as laboratories to physics majors. My responsibilities included curriculum devolvement, assigning and grading

homework and laboratory reports, preparing and administering tests and examinations and assigning grades etc.

ADMINISTRATIVE EXPERIENCE AT THE UNIVERSITY

- **Residential Warden/Administrator:** of the University residential halls/ Hostels, 04/1997 to 09/1999.
I worked as coordinator of several students' societies and arranged academic and extra-curricular activities such as Sports, Trips etc. My primary duties were to manage all kind of administration for university dorms.
- **Staff Proctor:** Sep 2007-march 2009.
As a staff proctor, I worked closely with the students to maintain decency on Campus. As a staff proctor, I was also part of the team maintaining law and order on Campus, resolving students issues etc.
- **Convener/Coordinator Science Society:** University of Peshawar, sep 2008-mar2009.
I have arranged several Seminars, Science Fairs and Scientific Trips for the students.
- University Committee Services on several committees.

JOURNALS PUBLICATIONS

- Hugh H. Richardson, Michael T. Carlson, Perdo Hernandez, **Aurangzeb Khan** and Alexander O. Govorov "Thermal *Image of Optically-excited Single Gold Nanoparticles Immobilize on a Surface of AlGaN*" to be submitted soon.
- **A. Khan**, S. N. Khan, W. Jadwisienczak "One Step Growth of ZnO Nano-Tetrapods by Simple Thermal Evaporation Process: Structural and Optical Properties" Submitted, Sci. Adv. Materials (In Review)
- **A. Khan**, S. N. Khan, W. Jadwisienczak and M. E. Kordesch " Growth and optical properties for non-catalytically grown ZnO micro-tubules by simple thermal evaporation ", Materials Letters **63** 2019 (2009).
- **A. Khan**, S. N. Khan, W. Jadwisienczak and M. E. Kordesch " Raman spectroscopic studies of monoclinic Gallium Oxide (β -Ga₂O₃) Nanostructures: A comparison between nanowire and nanobelts", Accepted Sci. Adv. Materials (2008).
- K. Jibreel, **A. Khan** and M. E. Kordesch; "Amorphous Hafnium Oxide thin films for antireflection" optical coatings Surface & Coatings Technology **202** 2500 (2008).
- **A. Khan** and M.E. Kordesch "Synthesis of Novel Microphone-Like ZnO microstructures"

Materials Letters **62**, 230 (2008).

- A Chakraborty, **A. Khan**, P. Dutta and M. S. Seehra “*Dependence of the Microwave Characteristics of Fe-Zr-N Films on Nitrogen Concentration*” Materials Letters **62**, 970 (2008).
- A. R. Zanata, **A. Khan** and M. E. Kordesch, “*Red-green-blue emission and energy transfer processes in amorphous SiN films doped with Sm and Tb*” Journal of physics: condensed matter **19** 436230 (2007).
- **A. Khan**, W. Jadwisienczak and M. E. Kordesch "Catalyst free synthesis and luminescence properties of well aligned ZnO nanorods", Physica E **39** 258 (2007).
- K. Jibreel, **A. Khan** and M. E. Kordesch; “*Optical properties of a-Be₃N₂ sputtered thin films*” Joun. Appl. Phys **101** 103532 (2007).
- A Chakraborty, **A. Khan** and K. R. Mountfield “*Material by design: Effect of deposition temperature on the magnetic properties of FeZrN*” Physica B, **392**, 7 (2007).
- **A. Khan**, W. Jadwisienczak and M. E. Kordesch "One step preparation of Ultra-wide β -Ga₂O₃ nanosheets and nanobelts and luminescence properties", Physica E **35** 207 (2006).
- **A. Khan**, W. Jadwisienczak and M. E. Kordesch "From Zn microspheres to hollow ZnO microspheres: A simple route to the growth of large scale metallic Zn microspheres and their oxidation to hollow ZnO nanospheres" Physica E **33** 331 (2006).
- **A. Khan** and M. E. Kordesch, "Large-scale fabrication of metallic Zn nanowires by thermal evaporation, Physica E, **33**, 88 (2006).

Peer reviewed Conference Publications

- Wojciech M Jadwisienczak, Hiroki Tanaka, Martin E Kordesch, **Aurangzeb Khan**, Savas Kaya, Venkat Vuppuluri "Studies of Ni and Co Doped Amorphous AlN for Magneto-optical Applications" Mater. Res. Soc. Symp. Proc. (2009) DOI: 10.1557/PROC-1202-I05-06.
- W. M. Jadwisienczak, A. Vemuru, **A. Khan**, S. N. Khan and M. E. Kordesch” *Visible Luminescence of Rare Earth Ions Doped Amorphous Zinc Oxide Thin Films Grown by Sputtering Technique*” Mater. Res. Soc. Symp. Proc. **957** 417 (2008).
- S. N. Khan, **A. Khan** and M. E. Kordesch “*Fabrication and Optical Characterization of Silicon Carbide Nanofibers*” Mater. Res. Soc. Symp. Proc. 1006-R01-08 (2007).
- S. N. Khan, **A. Khan** and M. E. Kordesch “*Conducting Polymer fibers of Polyaniline doped with Camphorsulfonic acid*” Mater. Res. Soc. Symp. Proc. **948** 53 (2007).

- **A. Khan**, W. Jadwisienczak, M. E. Kordesch " *Fabrication and Luminescence Properties of monoclinic Ga₂O₃ Nanostructures*" Mater. Res. Soc. Symp. Proc. **951** 239 (2007).
- **A. Khan**, S. N. Khan, W. Jadwisienczak, M. E. Kordesch; " *ZnO Nanofibers Doped with Ga, In and Er Fabricated with Electrospinning Technique*" Mater. Res. Soc. Symp. Proc. **957** K10-49 (2007)
- **A. Khan**, W. Jadwisienczak and M. E. Kordesch " *Synthesis and luminescence properties of novel ZnO nanostructures: micro and nanospheres, polyhedral cages, tetra-pods, needles, tipped nanorods, nanowires and other "microphone-shaped" structures*", Mater. Res. Soc. Symp. Proc. Vol. 900E, **0900-O06-18.1** (2005).
- **A. Khan** and M. E. Kordesch, " *Ultra-Fine ZnO Nanobelts and their Photoluminescence emission*", Mater. Res. Soc. Symp. Proc. **872**, J 18.16.1, (2005).
- **A. Khan**, H.H. Richardson, and M. E. Kordesch, " *Nanosphere Lithography of amorphous AlN:Ho³⁺, Tm³⁺ luminescent Thin Films*" Mat. Res. Soc. Symp. Proc. **EXS-2**, M 10.5.1, (2004).

AWARDS AND HONORS

- **Gold Medal Award** for outstanding undergraduate student, University Of Peshawar, Pakistan.
- **First Class First Position** at Undergraduate Studies.
- **First Class** throughout academic carrier.
- Merit Scholarship Award for Undergraduate Studies (1991-1995)
- United Bank of Pakistan Scholarship Award for young talented student (1994, 1995)
- District Scholarship Award for the best college student (1990-1993)

RESEARCH INTERESTS

Nanotechnology: nanostructure fabrications, processing, and patterning

Lithography: Optical lithography, electron beam lithography, masks, and imaging

Optics: designing, analysis, systems and components, lithography, and imaging

Semiconductors: Fabrication, characterization, and applications

Other: Magnetic semiconductors nanomaterials & thin films and its applications in memory devices, Application of nanomaterials and nanophotonics in biomedical research, Photonic crystal, Medical physics, Optoelectronic applications of wide-band-gap semiconductors, nanomaterials and thin films, Semiconducting devices, Electrospinning of Polymers and ceramics composites, Conducting Polymers.

EXPERIMENTAL/RESEARCH SKILLS

- Scanning electron microscopy: E-beam lithography with positive and negative resists.
- CAD design with AutoCAD and DesignCAD.

Materials Deposition Techniques;

- Chemical Vapor Deposition (CVD),
- RF Magnetron Sputtering
- DC Sputtering

 **Material Characterization Tools used;**

- Scanning Electron Microscopy [SEM],
- Transmission Electron Microscopy [TEM],
- Atomic Force Microscopy [AFM],
- X-rays Diffraction [XRD],
- Energy Dispersive X-ray Spectroscopy [EDX],
- Cathodoluminescence [CL],
- Photoluminescence [PL],
- **Near-Field Scanning Optical Microscopy (NSOM) and Raman Spectroscopy,**
- UV-VIS Spectrophotometry.

 **Computer Skills;**

Mathematica, Maple, HTML, MS office, Grams, Origin, LATEX and many other softwares related with Scientific instruments. Able to quickly adapt and use needed software.

CONFERENCES AND PRESENTATIONS

- 33rd International Nathia Gali Summer College, Nathia Gali, Islamabad, Pakistan June 2008.
- APS March Meeting 2006, Baltimore, MD, March 13-17 2007.
- MRS 2005 Fall Meeting, Boston, MA, Nov-Dec 2006.
- 2006 International Institute for Nanotechnology Symposium 11-12 OCT, Northwestern University, Evanston, IL.
- APS March Meeting 2006, Baltimore, MD, March 13-17 2006.
- MRS 2005 Fall Meeting, Boston, MA, Nov-Dec 2005.
- 2005 International Institute for Nanotechnology Symposium, Northwestern University, Evanston, IL.
- MRS 2005 Spring Meeting, San Francisco, CA, Mar-Apr 2005.
- MRS 2003 Fall Meeting, Boston, MA, Nov-Dec 2003.
- Bara Gali Summer College, Abbotabad, Pakistan, 1996,1997
- UNESCO Sponsored College Teaching Training, (delivered a series of lectures on Colleg Physics, Peshawar, Pakistan, 1998).

REFERENCES

1. **Dr. M. E. Kordesch (Ph.D Advisor)**
Professor
Department of Physics and
Astronomy,
Office: Clippinger 158
Telephone: 740-593-1703
Fax: 740-593-0433
E-Mail: kordesch@phy.ohiou.edu
2. **Dr. H. H. Richardson (Postdoc Advisor),**
Professor
Department of Chemistry and Bio-
Chemistry,
&
Director BNNT Program,
Office: Clippinger 231
Telephone: 740-517-8488
Fax: 740-593- 0148
E-Mail: richardh@ohio.edu
3. **Dr. Wojciech M. Jadwisienczak,**
Assistant Professor
School of Electrical Engineering and
Computer Science, Ohio University
346 Stocker Center Athens, OH 45701
Telephone: (740)-593-2067
Fax: (740)-593-0007
E-Mail: jadwisie@oak.cats.ohiou.edu
4. **Dr. Asghar Kayani**
Assistant Professor
Physics Department, 1120 Everett
Tower,
Western Michigan University,
Mail Stop 5252, 1903 W. Michigan
Ave
Kalamazoo MI 49008-5252
Email: Asghar.Kayani@wmich.edu
Phone # 269-387-4940
Fax # 269-387-4939
5. **Dr. Saw-Wai Hla (Ph.D Diss Comm Member),**
Professor
Department of Physics and
Astronomy,
Office: Clippinger 251
Tel: (+1) 740-593-1727 (office),
(+1) 740-593-2951 (lab),
Fax: (+1) 740-593-0433,
Email: hla@ohio.edu,
Web: <http://www.phy.ohiou.edu/~hla>
6. **Dr. Ghanim Ullah,**
Research Associate,
Center for Neural Engineering,
Dep. of Engineering Science and
Mechanics
The Pennsylvania State University
212 Earth-Engineering Sciences
Building
University Park, PA 16802
Tel: (814) 865-6951
Fax: (814)-865-6161
Email: ghanim@psu.edu