

# *C u r r i c u l u m   v i t a e*



**MANZAR ABBAS**

March 2, 1951,

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## **EXPERIENCES**

<b>Lecturer (Physics)</b> 1977-1982	Graduates and undergraduates students Government College, Rawalpindi Pakistan (Punjab Public Service Commission)
<b>Researcher</b> (1978-1980)	Thin Films by High Vacuum Evaporation Physics Department, Quaid-e-Azam University, Islamabad Pakistan
<b>Research Officer</b>	Pakistan Council of Renewable Energy, Technologies (PCRET), 25, H-9, Islamabad Pakistan
<b>Senior Research Officer</b> 1986-2002	Pakistan Council of Renewable Energy Technologies (PCRET), 25, H-9, Islamabad Pakistan
<b>In charge Administration</b> 1999-2001	Pakistan Council of Renewable Energy Technologies (PCRET), 25, H-9, Islamabad Pakistan
<b>Assistant Professor (Physics)</b> (2002-2011)	COMSATS Institute of Information Technology, Park Road Islamabad Pakistan.

## **RESEARCH FIELDS**

- Quantum Dot Solar Cells
- Solar Cells Fabrication and testing
- Amorphous/single crystal/Thin Films
- Antireflection Coatings
- Transparent Conducting Oxide Thin Films
- Inorganic/Organic Heterostructures
- Organic Photovoltaics
- Gas Sensors / Detectors

*Total Teaching / Research experience: More than 33 years.*

## **QUALIFICATIONS**

- |                         |  |
|-------------------------|--|
| • M. Phil (Physics)     | Quaid-e-Azam University, Islamabad Pakistan, (1980)  |
| • M.Sc (Physics)        | Quaid-e-Azam University, Islamabad Pakistan, (1976)  |
| • B.Sc(Phy, Math, Stat) | Punjab University, Lahore Pakistan, (1973)           |
| • F.Sc (Pre-Engg)       | Lawrence College Ghora Gali, Murree Pakistan, (1970) |
| • Matric (Science)      | B.I.S.E., Hyderabad, Pakistan, (1968)                |

**Expertise**

please see Appendix A

**TRAININGS**

please see Appendix B

**PUBLICATIONS**

please see Appendix C

**WORKSHOPS/SEMINARS**

please see Appendix D

**EXPERTISE**

- **Silicon Single Crystal Solar Cell Fabrication**
- **Thin Film Deposition and Characterization**
- **Organic/Inorganic Blend Solar Cell Fabrication**
- **Quantum Dot/ Dye Sensitized Solar Cells**
- **Gas sensors Fabrication and testing.**

Fallowing equipments are extensively used

- Silicon single crystal growth system
- Diffusion Furnace
- Photolithography systems
- LPCVD System
- Magnetron sputtering system
- High vacuum thin film coating systems
- Thin films by Laser Ablation
- Solgel techniques for nano particle fabrication
- Screen Printers
- Wafer etching hoods
- Sun simulators
- Laminators
- Dicing/scribing and ingot wafering saws
- Spin coaters
- Spray pyrolesses system
- Deionized water systems
- Glove Boxes
- Ellipsometer
- CV/IV Characterizations

In getting expertise on above technologies, I have been extensively using the fallowing Characterization techniques.

- UV-VIS-NIR Spectroscopy to measure transmittance, reflectance and absorption.
- Hall Effect to measure resistivity, mobility and carrier concentrations
- CV/IV Semiconductor Measurements System. A completely integrated instrument for measurement, analysis and interpretation of data from semiconductor devices and materials using CSM/Win window software.
- XRD to measure structural properties and identification of elements in the films.
- SEM to measure surface roughness / nano-porosity and elemental analyses using EDX
- Telestep/Ellipsometer to measure thin film thickness
- Sun simulator to measure I-V of solar cells

**TRAININGS****LOCAL**

1.

Training: Silicon solar cell Fabrication Technology

Trainers: Solarex USA &amp; Leybold Heraeus, Germany on the following equipments.

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|--|--|
| ▪ Diffusion Furnace                          | Making PN-Junction & Alloying.                                   |
| ▪ Screen Printers                            | Front Pattern Designing, Screen Fabrication,                     |
| ▪ Front & Back Metallization on Solar Cells. |  |
| ▪ Photolithography System                    | Masking for Triple Metallization on Si. Wafers                   |
| ▪ High Vacuum System                         | AR Coating, TCO Coating Heterojunctions                          |
| ▪ Dicing Saw / I.D.Saw                       | Wafer Cutting and scribing                                       |
| ▪ Fume Hood                                  | Silicon Wafer Etching/Texturing/Polishing                        |
| ▪ Four Point Probe                           | Resistivity Measurement  |
| ▪ UV-VIS-NIR Spectroscopy                    | Transmittance, reflectance, absorption                           |
| ▪ Sun Simulator                              | Current-Voltage Characteristics of Cells                         |
| ▪ Betascope/Interferometer                   | Thick and Thin Films thickness Measurement                       |
| ▪ Ni/Ag Electro-Plating                      | Metallization on Solar Cells                                     |
| ▪ Lamination                                 | Fabrication of Solar Cells Modules                               |
| ▪ Environmental Chamber                      | Solar Cells Module Testing                                       |
| ▪ Hall-Effect                                | Measurement of Resistivity, Mobility and Carriers Concentrations |
| ▪ Capacitance-voltage (CV)                   | Electrical Measurements  |
| ▪ XRD  | Structural Measurements  |

2. Training on Laboratory Quality Management and the Implementation of ISO/IEC 17025 Standard from 09 January – 13 January 2001. Organized by PNAC

3. Laboratory Assessor Training Course and the Implementation of ISO/IEC17025 Standard from 19 June–23 June 2001 Organized by Pakistan National Academic Council (PNAC)

FOREIGN

1. Installation & Operation of two High Vacuum Coating Systems Mentioned Below from Leybold Heraeus, Hanau, Germany: 1984

- HEAT RESISTIVE TYPE
- ELECTRON BEAM TYPE

2. One year Training & Research Under the Programme of International Center for Theoretical Physics, for R and D in Italian laboratories on the following topics: 1989-1990 Turin Italy.

Growth and Characteristics of a-Si-H doped and intrinsic films grown by **LPCVD method**.

Growth and Characterization of ITO: F films grown by E.B. evaporation in oxygenated atmosphere, using cryo-pump and Tin-Fluoride as dopant.

3. Training in Photovoltaics (Silicon Solar Cells) at Tingian Institute of Power sources, (TIPS) Tinjian China for two weeks in 2000.
4. Training in Photovoltaic (GaAs/Ga(Al)As) at Almaty, Kazakhstan State National University Almaty, Kazakhstan for 10 days in 2000
5. Research and Training on Organic/Inorganic and Quantum Dot Solar Cells 2006 (03 months) and 2008-2009 (06 months)

Department of Material Science and Engineering, University of Delaware Newark USA.

6. Training on CV system for one week in March 2007 at USA.

Material Development Corporation (MDC) California USA

Trainers: MDC California USA

Measurement of Resistivity, Carriers Concentrations etc in semiconductors and oxides

**Manzar Abbas****Publications****Publications in International Journals**

1. Defect induced ferromagnetism in carbon-doped ZnO thin films  
Sadaf Akbar, S.K. Hasanain, **Manzar Abbas**, S. Ozcan, B. Ali, S. Ismat Shah, *Solid State Communications* 151 (2011) 17–20.
2. Germanium Quantum Dot Sensitized TiO<sub>2</sub> Solar Cells, **M. Abbas**, B. Ali, S. I. Shah and P. Akhter, *Key Engineering Materials*, Vol. 442 (2010) p-404-414.
3. Fabrication and Characterization of Crack Free Nano Porous Titanium Dioxide Thin Films by Spray Deposition Technique, **Manzar Abbas**, Nazar Abbas Shah, Fazali Subhan and Muhammad Irfan,  
*Journal of Materials Science and Engineering*, ISSN 1934-8959, USA, May 2010, Volume 4, No.5 (Serial No.30).
4. Deposition and electrical properties of cadmium telluride thin films by thermal vacuum evaporation technique, Nazar Abbas Shah, **Manzar Abbas**, Muhammad Bashir, Waqar Ahmad Adil Syed, Muhammad Ashraf Atta, *Journal of Materials Science and Engineering*, ISSN 1934-8959, USA, Oct. 2009, Volume 3, No.10 (Serial No.23)
5. Barrier Height, Series Resistance and Diode Quality Factor for a Tin-Oxide-Doped Zinc Oxide Silicon Junction Diode, I. A. Qazi, A. Haque and **M. Abbas**, *Semicond. Sci. Technol*, 7 (1992), p-257-277.
6. Evidence of a Simple Cubic Phase in Electron Beam Vacuum Evaporated Indium – Oxide on glass Substrate, **M. Abbas**, I. A. Qazi, A. Samina, M. Masood and A. Majeed, *J. Vac. Sci. Tech. A* 13(1) 151 1995.
7. Optical and X-ray studies of low resistivity CdS films, A.K.S, Aqili, Z, I.A.Qazi, A.ul. Haq, M.Ahmed, **M. Abbas**, *Journal of Materials Sciences Letter* 19,2000, 2129-1231.
8. Fabrication of Cadmium Telluride (CdTe) Thin Films using the Stacked Elemental Layer Deposition Technique, M. Abbas et al. *Gelitekhnika: Official Journal of the Uzbekistan Academy of Science*.
9. Effect of Antimony Doping on the Structure, and Electrical and Optical properties of Tin Oxide Thin Films, A. K. S. Aqili, M. Abbas, *J. Mater. Sci. Lett.*, (Netherlands), (2001).
10. Photovoltaics-Its Physics ,Technology and Applications, P.Akhter, M.N.Zakir, A. T. Naveed and **M. Abbas**, *J. of Nat. Sci. and Mathematics*, Lahore Pakistan, Vol.41, No.2, October, 2001, 107-112

**Publications in International Conferences**

1. Low cost metallization processes for BSF Solar Cells, P. Akhter M. Ahmad, A. Baig, **M. Abbas** and A. Mufti, *World Renewable Energy Congress*, Reading United Kingdom, 1990 in *Energy and the Environment into the 1990's*, Vol. 1, p-125-129.
2. Distribution of Occupied States in Hydrogenated Microcrystalline Silicon Obtained by LPCVD, G. Amato, G. Boero, F. Fizzotti, C. Manfredotti and **M. Abbas**, *Eleventh E. C. Photovoltaic Solar Energy conference*, 12-16, October 1992.
3. Microcrystalline Silicon Deposition by LPCVD, C. Manfredotti, F. Fizzotti, G. Amato, L. Borino and **M. Abbas**, *MRS Fall Meeting*, 1992, Boston, MA. USA.

4. High Quality P-Doped  $\mu\text{-Si-H}$  Films as obtained by low Temperature LPCVD of DISILANE, C. Manfredotti, F. Fizzotti, G. Amato, L. Boarino, **M. abbas**, Mat. Res. Soc. Symp. Proc. Vol. 283. 1993
5. Screen Printed Silver Metallization on Solar Cells, **M. Abbas**, T. Hussain, I. A. Qazi and P. Akhter 2<sup>nd</sup> International Symposium-Workshop on Silicon Technology Development and its Role in the Sun Belt Countries, 8-11 May 1993, Islamabad, Pakistan.
6. Dependence of Electrical and Optical Properties of Electron beam Vacuum Evaporated Indium Tin Oxide Thin films, **M. Abbas**, I. A. Qazi, A. Samina, M. Masaood and M. Majeed, 2<sup>nd</sup> International Symposium-Workshop on Silicon Technology, Development and its Role in the Sun Belt Countries, 8-11 May 1993, Islamabad, Pakistan.
7. Angle of Incidence Effect in Electron Beam Vacuum Evaporated Indium Oxide Thin Films, **M. Abbas**, I. A. Qazi, A. Samina, A. Majeed and M. Masaood, 2<sup>nd</sup> International Symposium-Workshop on Silicon Technology, Development and its Role in the Sun Belt Countries, 8-11 May 1993, Islamabad, Pakistan.
8. Optical Properties of Higher and Lower Refractive Index composites, M. Farooq, M.G. Hutchins, **M. Abbas** and P. Akhter, 6<sup>th</sup> International Symposium on Advanced Materials; Islamabad, September 19-23, 1999.
9. Optoelectronic Properties of Thermally Evaporated Large Area Cadmium Sulfide Thin Films for Hetrojunction Devices, S. Arshad, **M. Abbas**, P. Akhter, V.S. Antochenko and T.I. Taurbaev, 6<sup>th</sup> International Symposium on Advanced Materials; Islamabad, September 19-23, 1999.
10. Determination of the Activation Energy and Diffusion Constant for Phosphorous Diffusion in Boron Doped Silicon single Crystal Wafer, A.Majeed, A.Baig, **M. Abbas**, P. Akhter, T.I.Taurbaev, B.G.Topanov and K.K.Dikhanbaev, 6<sup>th</sup> International Symposium on Advanced Materials; Islamabad, September 19-23, 1999.
11. Magnetron Sputtered  $\text{TiO}_2$  and  $\text{Al}_2\text{O}_3$  Antireflection Coatings, T.I. Taurbaev, B.G. Topanov, V.F. Shorin, V.E. Nikulin, K.K. Dikhanbaev, P. Akhter, **M. Abbas**, M. Ashraf, A. Majeed, 6<sup>th</sup> International Symposium on Advanced Materials; Islamabad, September 19-23, 1999.
12. Superthin Shottky Solar Cell Structure with a Back Isotope hetrojunction, V.S. Antoschenko, T.I. Taurbaev, P. Akhter, **M. Abbas**, M. Masood, 6<sup>th</sup> International Symposium on Advanced Materials; Islamabad, September 19-23, 1999
13. ZnTe Thin Films Prepared by Two Source Evaporation Method, 6<sup>th</sup> International Symposium on Advanced Materials (Islamabad) (1999) 525-528.
14. Antireflecting and Passivating Coatings for Si Solar Cells on a Basis of  $\text{SiO}_2$  and  $\text{TiO}_2$  Layers, T.I. Taurbaev, V.E. Nikhlin, V.F. Shorin, B.G. Topanov, K.K. Dikhanbaev, P Akhter, **M. Abbas**, 7<sup>th</sup> Arab Conference on Solar Energy Technology, 2001, Sharjah, U.A.E.
15. Macroporous Structures and Optical Properties of Chemically etched Porous Silicon, A. A. Migunova, T.I. Taurbaev, P. Akhter, **M. Abbas**,. 7<sup>th</sup> Arab Conference on Solar Energy Technology, 2001, Sharjah, U.A.E.
16. Doping of amorphous hydrogenated silicon from a gas phase using monosilylphosphine and monosilylborane, J.J.Ivanov\*, S.M.Manakov\*, F.A.Mukashev\*, K. Tauasarov\*, T. I. Taurbaev\*, P. Akhter\*\*, B. G. Topanov\*, **M. Abbas\*\***. 7<sup>th</sup> International Symposium on Advanced Materials; 17-21 September 2001, Islamabad.
17. Correlation Between Si-H and Si-H<sub>2</sub> Bond Densities and Electronic and Structural Properties in a-Si:H Films Prepared by Magnetron Method, S.M.Manakov, K.Tauasarov\*, T.I. Taurbaev\*, P. Akhter, **M. Abbas**, 7<sup>th</sup> International Symposium on Advanced Materials; 17-21 September 2001, Islamabad.
18. Rapid Thermal Processing (RTP) for Formating n+ p- junction of Si SolarCells, T.I. Taurbaev\*, P. Akhter\*\*, V.F Shorin, K.K. Dikhanbaev, B.G.Topanov, V.E. Nikulin, R.Utesinova, **M. Abbas**, A. Baig and A. Majeed, 7<sup>th</sup> International Symposium on Advanced Materials; 17-21 September, 2001, Islamabad.

19. Barrier Height, Series Resistance and Diode Quality Factor for Thin Oxide Doped ZnO-GaAs Junction Diode, M. Masood Hashmi, **M. Abbas**, P. Akhter, V.S. Antoschenko, Sh. B Baig anatove, T.I.Taurbeev, V.F. Shorin, 7<sup>th</sup> International Symposium on Advanced Materials; 17-21 September, 2001, Islamabad.
20. Effect of Antimony doping on the structure, electrical and optical properties of TIN Oxide thin films, Akram K. S. Aqili, Asghari Maqsood, I. A. Qazi, A.ul Haq and **M. Abbas**. 7<sup>th</sup> International Symposium on Advanced Materials; 17-21September, 2001, Islamabad.
21. Electrical and optical properties of Vapour deposited Organic Dye Thin Films, Kh. Karimov, P. Akhtar, A. Hussain. **M. Abbas** and others.8<sup>th</sup> International symposium on Advanced Materials,8-11 Sept. 2003.Islamabad Pakistan.
22. Study of Aluminium doped Zinc Oxide Thin Films prepared by Vacuum Evaporation and Solution dipped Hybrid Technique, A.Hussain, P.Akhtar, **M. Abbas**, I.A. Qazi, M. Azim, 8<sup>th</sup> International symposium on Advanced Materials,8-11 Sept. 2003.Islamabad Pakistan. S
23. Study of Morphology of Separated Ga<sub>1-x</sub>Al<sub>x</sub>As Films, T. I. Taurbaev, B. Baiganatova Sh, P.Akhtar, **M. Abbas** and A.Hussain, 8<sup>th</sup> International Symposium on Advanced Materials,8-11 Sept. 2003.Islamabad Pakistan.
24. Magnesium Silicide Production and Silane Synthesis on its Basis,T.I.Taurbaev,PAkhtar,F.A.Mukashev,S.M.Manakov,U.V.Frantsev,B.MKablanbek, **M. Abbas**, A.Hussain,8th International Symposium on Advanced Materials,8-11 Sept. 2003, Islamabad, Pakistan.
25. Study of influence of thermal annealing on the photolumenance of the porous silicon received by a new method ,K.K.Dikhanbayev,T.I.Taurbaev, P.Akhtar, **M. Abbas**, A. Baig, 9th International symposium on Advanced Materials,19-22 Sept.2005.,Islamabad Pakistan.
26. Vibrational Spectra of Amorphous Silicon Thin film S, S. M. Manakov, B. M. Kablanbekov, T. I. Taurbaev, S. Zh. Tokmoldin, P. Akhtar, **M. Abbas**, M.M.Hashmi and A.Hussain,9<sup>th</sup> International Symposium on Advanced Materials,19-22 Sept. 2005 Islamabad Pakistan.
27. Development and Characterization of p-GaAs/n-CdS Heterojunction using High Vacuum Evaporation,A.Hussain, **M. Abbas**, P.Akhter. A.Mohsin, W.R.Butt, T. I. Taurbaev. S.M. Manakov, V. F.Shorin, 9th International Symposium on Advanced Materials,19-22 Sept. 2005 Islamabad Pakistan.
28. Development of Optical Coatings with Gradient Layer, Providing the best Thermal Balance of Solar Cells, V.E. Nikulin, T.I.Taurbaev, **M. Abbas**, P.Akhter,A.Hussain and M.M.Hashmi, 9th International Symposium on Advanced Materials,19-22 Sept. 2005 Islamabad Pakistan.
29. Organic and Inorganic Hybrid Photovoltaic Cells. Jeffrey Hanft, Changheui Ko, **M. Abbas**, Yashpa Bandari, Mary Galvin, S. Ismat Shah,CIIIT-ISESCO I nternational school on surfaces,thin films,nanostructures and applications,October 27-Nov 01, 2006, Lahore Pakistan.
30. Morphology, photoluminescence and raman scattering investigations of gaas porous layers, obtained by electrochemical etching Zh.K.Issalin, T.I.Taurbayev, G.Mussabek P. Akhter, **M. Abbas**, 10<sup>th</sup>International Symposium on Advance Materials,September 19-22, 2007 Islamabad
31. Numerical analysis of antireflection coating with inhomogeneous layer forsilicon, V.E. Nikulin, T.I. Taurbayev, P. Akhter, **M. Abbas**, 10<sup>th</sup>International Symposium on Advance Materials,September 19-22, 2007 Islamabad.
32. Antireflection Coating from Porous Multicristalline Cilicon, E.A. Daineko, K.K. Dihanbayev, Zh.K. Issalin, V.E. Nikulin,T.I. Taurbayev P. Akhter, **M. Abbas**, M. Ashraf, 10<sup>th</sup>International Symposium on Advance Materials,September 19-22, 2007 Islamabad.
33. Investigation of Influence of Electronic Irradiation on Photoluminescence Spectrum and I-spectrum of Porous Silicon E.A. K.K. Dihanbayev,T.I.Taurbayev, P. Akhter, **M. Abbas**, A. Hussain, 10<sup>th</sup>International Symposium on Advance Materials,September 19-22, 2007 Islamabad.

## **Publications in National conferences**

1. Characterization of SnO<sub>2</sub>/ ZnO P-GaAs Hetrojunction with improved Ohmic Contacts on GaAs Substrates, **M. Abbas**, M. Masood Hashmi, P. Akhter, I.A. Qazi, National Symposium on Physics in Industry, 28<sup>th</sup>-30<sup>th</sup> June, 2001, Karachi.
2. Optoelectronic Properties of Cadmium Sulphide (CdS) Window Layers for Thin Film Solar Cell, S. Arshad, **M. Abbas**, 2<sup>nd</sup> Baragali School on Electronics, 17-23 June, 1994, Baragali, Pakistan.
3. Infrared bands of electron-beam vacuum evaporated Tin-Oxide thin film determined by Fourier Transform Spectroscopy, I. A. Qazi, **M. Abbas** and S. Hussain, 5<sup>th</sup> National Conference on Solid States Physics, Lahore, Pakistan, October, 26-29, 1991.
4. Efficient and low cost ZnS Antireflection coating for single crystal silicon solar cells, **M. Abbas**, I. A. Qazi and A. Samina. Annual Conference 1993 at Center for Solid State Physics University of the Punjab, Lahore, Pakistan 2 – 5 April 1993.
5. Transparent Conducting Oxides and their uses in semiconductors, I. A. Qazi, **M. Abbas**, Pakistan Society for Semiconductor Science and Technology, May 3, 1995.
6. Organic solar cells for future low cost and sustainable solar energy applications in the developing world, **M. Abbas**, M.Azim, I.A.Qazi , P.Akhter, A.Hussain , T.Hussein, Meetig on Renewable Energy Technologies and Sustainable Development Feb.10-11,2004 Islamabad, Pakistan.
7. Organic Solar Cells, a future low cost solar energy source. **Manzar Abbas**, Topics In Semiconductors and Workshop On Nanotechnology, April 12-17,2004 Islamabad ,Pakistan.
8. Organic solar cells for future low cost and sustainable solar energy applications in the developing world, **M. Abbas**, M.Azim, I.A.Qazi , P.Akhter, A.Hussain , T.Hussein, Meetig on Renewable Energy Technologies and Sustainable Development Feb.10-11,2004 Islamabad, Pakistan.
9. Organic Solar Cells, a future low cost solar energy source. **Manzar Abbas**, Topics In Semiconductors and Workshop On Nanotechnology, April 12-17,2004 Islamabad, Pakistan.

## **APPENDIX-D**

### **WORKSHOP/SEMINAR**

#### **FOREIGN**

1. Winter School on Technology, Characterization and Properties of Epitaxial Electron Material, 13 to 29 Jan 1986, ICTP, ITALY.
2. Spring College in Condensed Matter and Physics as Interaction of Atom and Molecules with Solid Surfaces, 25 April to 7 June, 1988 ICTP, ITALY
3. Workshop on Material Science and Physics of Non-Conventional Energy Sources, 11 to 29 Sept. 1989, ICTP, ITALY.

#### **LOCAL**

1. Urdu Science Society Karachi, Pakistan, 1982
2. Nathiagali Summer College Nathiagali, Pakistan, 1983
3. Nathiagali Summer College Nathiagali, Pakistan, 1985
4. International Symposium Workshop on Silicon Technology Development and its Role in Sun Belt Countries, NIST, Islamabad, Pakistan, 14-18 June, 1987
5. National Workshop on Photovoltaic System, NIST, Islamabad, Pakistan 2-6, October 1988
6. International Symposium Workshop on Photovoltaic Technology (Solar Cell Fabrication), NIST, Islamabad, Pakistan 13-22 May 1990
7. National Workshop on Energy Information Handling, NIST, Islamabad, Pakistan, 12-16 May 1991.

8. 2<sup>nd</sup> International Workshop on Silicon Technology, NIST, Islamabad, Pakistan, 8-11, May 1993.
9. PIP Conference 1993, Lahore, Pakistan, 2-5 April 1993.
10. 3<sup>rd</sup> International Symposium on Advanced Materials, Islamabad, Pakistan, 20-24 September, 1993
11. First National Workshop on magnets and magnetic material, Islamabad, Pakistan 20<sup>th</sup> April 1994
12. 2<sup>nd</sup> Baragali School of Electronics, Baragali, Murree, Pakistan, 18-23 June 1994
13. PIP conference 1995, Bhawalpur, Pakistan 2-5 April 1995
14. 4<sup>th</sup> International Symposium on Advanced Materials, Islamabad, Pakistan, 17-21 September 1995.
15. Training Course on Vacuum-98 organized by Vacuum Society of Pakistan 10-14 November 1998
16. 6<sup>th</sup> International Symposium on Advance Materials 19-23<sup>rd</sup> September 1999
17. International Nathiagali Summer College June 1999.
18. 7<sup>th</sup> International Symposium on Advance Materials 17-21<sup>st</sup> September 2001
19. International workshop on Vacuum in Renewable Energy Technologies Islamabad. April, 15-19, 2003
20. 8<sup>th</sup> International Symposium on Advance Materials, September 2003 Islamabad
21. 1<sup>st</sup> One –Day Meeting of Nanomaterials Forum, March 17, 2005 Islamabad
22. Meeting on Renewable Energy Technologies and Sustainable Development Feb. 10-11, 2004 Islamabad, Pakistan.
23. Topics In Semiconductors and Workshop On Nanotechnology, April 12-17, 2004 Islamabad ,Pakistan.
23. International Nathia Gali Summer College 27-06-2005 to 13-07-2005
25. Tow- day Seminar On Indigenous Development of Innovative Technologies in the field of Renewable Energy, 22-23 August, 2005. Islamabad, Pakistan.
26. 9<sup>th</sup> International Symposium on Advance Materials, September 19-22, 2005 Islamabad
27. 10<sup>th</sup> International Symposium on Advance Materials, September 19-22, 2007 Islamabad