

# Bio Data of R K Pandey

## 1. Personal Details

|                                  |   |
|----------------------------------|---|
| <b>Name</b>                      | <b>RAJENDRA KUMAR PANDEY</b>  |
| <b>Father's Name</b>             | <b>Shri K. P. Pandey</b>  |
| <b>Designation &amp; Address</b> | <b>Professor of Physics</b><br><b>Director, University Institute of Technology</b><br>Barakatullah University<br>Bhopal - 462026, <b>India</b><br>Phone: + 91-755-2491742<br>Mobile: +91-9893383938<br>E-mail: rkp_bu@yahoo.com |
| <b>Nationality</b>               | Indian  |
| <b>Date of Birth</b>             | 24 <sup>th</sup> June 1953  |

## 2. Educational Qualifications

*Merit position holder in all school and University Exams*

| <b>Degree</b>    | <b>Subjects</b>      | <b>Div</b> | <b>Marks in %</b> | <b>Institute</b>            | <b>Board/Univ</b> | <b>Year</b> |
|------------------|----------------------|------------|-------------------|-----------------------------|-------------------|-------------|
| High School      | Phys. Chem. & Maths. | FIRST      | 81%               | LBS School Bilaspur(CG)     | M.P.Board         | 1968        |
| Higher secondary | -do-                 | FIRST      | 88%               | -do-                        | M.P.Board         | 1969        |
| B.Sc.            | -do-                 | FIRST      | 65 %              | Science College Raipur (CG) | Raipur Univ       | 1972        |
| M.Sc.            | Physics              | FIRST      | 69%               | UTD Raipur                  | Raipur Univ       | 1974        |
| Ph.D.            | Thin Films           | —          |                   | -do-                        | Raipur Univ       | 1980        |

## 3. Area of Specialization

- Nano Science and Technology
- Thin/Thick Film Technology
- Semiconductor Devices
- Photovoltaic Energy Conversion

## 4. Employment Profile

### 4.1 Teaching Positions

|                             |   |
|-----------------------------|---|
| <b>Professor of Physics</b> | Department of Physics,<br>Barkatullah University, Bhopal<br>(March 6, 1994 - till date.<br><b>Scale 16400/-22500/</b>   |
| <b>Reader in Physics</b>    | Department of Physics,<br>Bhopal University, Bhopal<br>(March 6, 1986 to March 5, 1997)<br><b>UGC Scale 3700/-5700/</b> |
| <b>Lecturer in Physics</b>  | Department of Physics,<br>Devi Ahilya University, Indore.<br>(March 2, 1981 to March 5, 1986)<br><b>UGC scale</b>       |
| <b>Lecturer in Physics</b>  | Department of Physics,<br>Raipur University, Raipur.<br>(Dec. 1980 to Feb. 1981)<br><b>UGC scale</b>                    |

### 4.2 Notable invitations from abroad

|  |   |
|--|---|
| <b>Visiting professor:</b>             | Osaka University, Institute of Scientific and Industrial Research, Osaka, Japan, 2006   |
| <b>Senior JSPS Invitation: Fellow:</b> | Delivering lectures and formulation of research collaboration with Japanese R & D Institutes. May-July, 2005  |
| <b>ENEA/ICTP Award:</b>                | Invited to work at Portici, Italy, 1996   |
| <b>Course Director:</b>                | Workshop on Electrodeposition of solid state Materials, University of Malaya, Malaysia, Kuala Lumpur, June 1993<br>Sponsors: Asian Physics Society and Government of Malaysia |

**ICTP (UNESCO) Visiting Scientist:** Milan Polytechnic, Milan Italy, October 1989 – November 1990

**Visiting Scientist:** International Center for Theoretical Physics, Trieste, Italy, September 1989.

**Visiting Scientist/ Speaker:** Tokyo University Japan, Osaka Invited University Japan, Kieo University, University of Kobe, Kanagawa Academy, Kantogakuin University and National University Singapore, Brown University, Providence, USA and Chicago

### 4.3 Administrative Positions

**Member:** University senate (2007-2010)

**Member:** University senate (1998-2000)

**Member (UGC Nominee):** BoG, National Institute of Technology Jamshedpur (Jharkhand)

**Member:** BoG, University College of Engineering, Bhopal University, Bhopal (1998-2001)

**Dean:** Faculty of Sciences, Bhopal University, Bhopal (1998-2000)

**Director:** University Institute of Technology, Bhopal University, 2007-Till date

**Director (Research & Development) :** **Bhopal University, Bhopal**  
Promotion of R&D activities in the university; Organization of R&D fund administration at Univ. level, establishment of coaching centers for NET/GATE, etc. (1998-2000)

**Director:** **Institute of Physics & Electronics,** Bhopal University , Bhopal, June 1995-Jan 2004 Started M. Tech (Material Science) Programme; Introduced novel computer based no credit Program for M.Sc. Physics and M.Sc. Electronics, Introduced industrial/on job training and /or projects, Started Placement activities, Generated resources of over 4 Crores.

|                     |  |
|---------------------|--|
| <b>Director:</b>    | <b>University Computer Centre</b><br>Bhopal University, Bhopal, since June 1995 Completely renovated/ modernised computer facilities. Initiated training / continuing educational programmes, job works etc. formulated and introduced interdisciplinary programme of Masters degree in Computer Management. |
| <b>Head:</b>        | <b>Computer Science and Applications,</b><br>Created modern computational facilities and formulated/introduced self financing courses (M.Sc. Computer Science, M.Sc. Information Technology)   |
| <b>Coordinator:</b> | <b>UGC, New Delhi Sponsered Special Assistance Programme, Grant to physics Department, Bhopal University, 1994-2004</b>  |
| <b>Coordinator:</b> | <b>UGC, New Delhi COSIST Programme April 2000-2005</b>   |
| <b>Coordinator:</b> | <b>M.Sc.(Electronics) Programme Grant of UGC New Delhi, Developed the M.Sc. Electronics (Instrumentation) programme &amp; labs. Started a new interdisciplinary programme on Biomedical Instrumentation.</b>   |
| <b>Chairman:</b>    | <b>Central Board of Studies for MP University</b> structuring & formulation of B.Sc. Instrumentation Programme.  |
| <b>Chairman:</b>    | <b>Board of Studies in Physics</b><br>Bhopal University since 1995-2007  |
| <b>Chairman:</b>    | <b>Board of Studies in Electronics</b><br>Bhopal University since 1995 April 2001.   |

## 5. Publications:

|                           |                                       |
|---------------------------|---------------------------------------|
| <b>Book:</b>              | 1 from Marcel Dekker, New York, U S A |
| <b>Book Contribution:</b> | 1                                     |
| <b>Review Article:</b>    | 1                                     |

**Original Research Papers:** Over 70

**Conference Presentations:** Over 60

## **6. Membership of Professional Societies:**

**President:** Materials Science Section of The Indian Science Congress Association, Kolkata, 2005-2006

**Life Member:** Solid State Ionics Society, India

**Life member:** Indian Science Congress Association

**Life Member:** Materials Research Society of India

**Life Member:** Indian Physics Association

**President:** IPA, Bhopal Chapter

## **7. Resource Generation and infrastructure Development :**

Generated more than 6 Crores through Research projects, self finance programs etc. at Barkatullah University, Bhopal

**7.1 Resource Generation through Sponsored Research Projects as Principal Investigator: (1986- Till Date) Total Projecta Rs. 1,64, 45, 000/-**

### **7.1.1 Completed projects:**

- (i) Defence Research Development Organisation New Delhi sponsored project "**Chemical Routes for Passivation of MCT for IR Detectors**" Rs 30.0 lacs, 2000-2004.
- (ii) Defence Research Development Organisation New Delhi Sponsored Project on "**Thermoelectric Coolers**" Rs 20.0 lacs, 2000-2004.
- (iii) Department of Atomic Energy, Govt. of India, Sponsored Project on "**Development and Study of Nanocrystalline semiconductor Thin films and Devices**" Rs 20 lacs.

- (iv) Department of Science & Technology, New Delhi Sponsored Project on **"Electro Chemical Synthesis of Magnetic Multilayers and their characterisation"** 2000-2003; Rs 15 lacs.
- (v) MPCST sponsored project on **"CdS/CdTe Heterojunctions"** Rs 1.5 lacs, 1996-99
- (vi) DST sponsored project on **"Rapid Thermal Annealing of Cu-In/Se Stacked layer"** Rs 6.5 lacs, 1993-94
- (vii) MPCST sponsored project on **" Rapid Thermal Annealing of CuInSe<sub>2</sub> Stacked Layer"** Rs 1 lac, 1991-93.
- (viii) DNES sponsored project on **"Preparation and Characterization of Non-aqueous Electroplated CdTe Based Heterojunction Solar Cells"** Rs 5 lacs, 1991-94.
- (ix) CSIR sponsored project on **" Non-aqueous Electroplated CdTe films : Preparation, Characterization & Solar Cell Studies"** Rs 0.8 lac, 1988-92
- (x) DNES sponsored project on **"Solar Energy Conversion by Electrochemical Photovoltaic Cells"** Rs 4 lacs, 1988-91
- (xi) MPCST sponsored project on **"Development & Study of Solar Cells"** Rs 0.65 lacs, 1985-88.
- (xii) CSIR sponsored project on **"Development of Low Cost Materials, Technologies for Solar Cells"** Rs 1.45 lacs, 1985-88.

#### **7.1.2 Ongoing Projects Approved:**

- (i) DST New Delhi project **Electrochemical Synthesis of Organised Low Dimensional Group II-VI Semiconductors**, 20.39 lakhs.
- (ii) UGC-DAE-CSR Project **Characterization of Semiconductor Quantum dots Grown by Electrochemical Nanoprocesses**, Rs 6 lakhs.
- (iii) DRDO Project **"Study of Passivation Processes for MCT and Development of single Element IR Detectors"**, 33 lakhs 2008-2011.

### **7.2 Resource Generation as Director Institute of Physics & Electronics and Coordinator of Institutional Activities Total Resources over Rs. 3 crores.**

- (i) Proposed and co-ordinated the UGC New Delhi sponsored Special Assistance Programme (1994 - 2004).
- (ii) Proposed and co-ordinated the UGC New Delhi sponsored COSIST Programme.
- (iii) Introduced zero lab computer programmes for M.Sc. Physics & Electronics
- (iv) Proposed and Coordinated UGC Sponsored M.Sc. Electronics Programme during 1994 - 1999.

### **7.3 Resource Generation as Director Institute of Physics & Electronics and Coordinator of Institutional Activities Total Resources over Rs. 3 crores.**

- (i) Introduced Self-finance programs
- (ii) Introduced Human Resource Training Programmes in computers.
- (iii) Modernized Infrastructure facilities in computers.
- (iv) Computerization of University Employee Salary and related work
- (v) Publication of University Act and Statutes, Hosting of First Web Site of the University.

### **7.4 Resource Generation as Head University science and instrumentation Centre.**

Successfully proposed Instrument Maintenance Facility sponsored by the U.G.C., New Delhi.

## **8. Infrastructure Development as Director/HOD:**

- (i) Completed approx 16,000 sq ft area building of Institute of Physics & Electronics.

- (ii) Provided architectural face lift to the existing building and developed gardens; parking.
- (iii) Developed a fully air-conditioned new seminar hall of capacity 200 with latest multimedia projection facility.
- (iv) Development of a mechanical workshops for Physics & USIC
- (v) Created from ab-initio a highly sophisticated experimental research facilities in materials science which are unique in the state and compare with the best anywhere including low angle x-ray Diffractometer; Multimode Atomic Force Microscope; Inductively coupled Plasma Emission spectrometer; Low Temperature (Liq He) measurement facility; full fledged optoelectronic characterization facility; thin/thick film growth facilities etc.
- (vi) Modernized and expanded the University Computer Centre for students, researchers, and faculty and university utility services. Presently the centre owns state of art computing facilities including dual processor based server, workstation, and digitizers, Windows NT, Novel Netware and AIX Platforms.

## 9. Teaching Accomplishment:

### 9.1 As HoD Physics/Electronics:

- Started and developed **M. Tech Materials Science Programme** and taught courses on Thin Film Technology, Characterisation Techniques, Sc and Tech of Materials, Novel Materials etc.
- Restructured and modernized M.Sc. Physics and M.Sc. Electronics courses.
- Created “New Laboratory facilities” in following areas:
  - (i) Sensors and Transducers lab. for Electronics
  - (ii) Electronic Instrumentation lab:
  - (iii) Microprocessor and Microcontroller lab with hardware and software training on data acquisition and control in real time, etc.
  - (iv) PC based circuit design laboratory
  - (v) Communication laboratory for training in modern digital and fiber optics communication principles.
  - (vi) Materials Science Lab. for M.Tech and M.Sc ( Physics) students
  - (vii) Fault finding and Repair for Electronics and physics students
  - (viii) Zero Lab. Programme: This is a novel idea introduced for the first time in a M.Sc. curriculum and has been praised by many eminent academicians. The principle objective of the lab is to provide training

- on computer application software, programming and problem solving using C++, use of Internet, etc
- Taught theory courses on Solid State Physics, Materials Science, Analog and Digital Electronics, Microprocessors, Sensors and Transducers, Instrumentation, etc at the Masters programme in Physics and Electronics.
- Guided a number of projects at the M. Sc and M. Tech level.

### 9.2 As HOD Computer Science:

- Formulated M.Sc. (Computer Science); M.Sc. (Information Technology), MCA and Masters in Computer Management Program at Barkatullah Univ.
- Developed course structure and laboratory infrastructure for the above courses.
- Taught several courses in the above subjects.

### 9.3 As Director, Computer Centre:

- Developed the University Computer Centre
- Introduced human resource development programs in computers for working persons
- Introduced M.Sc. Information Technology and Masters in Computer Management programs

## 10. Research Accomplishment:

**Research Experience:** 28 Yrs.

**Research Guiding Experience:** 23 Yrs.

**Research Interests:** Nanomaterials/Nanotechnology  
Magnetic Multilayers  
IR Sensors  
Thin/Thick film Technology  
Semiconductor Device Physics  
Solar Photovaltaics  
Instrumentation Development

**International Collaborations:** 1. University of Sheffield, UK  
2. Department of Physics, Trinity, College, University of Dublin, Ireland

3. Waseda University, Japan
4. Osaka University, Japan

**Referee of international journals**

1. Materials Research research Bulletin (U.S.A);
2. J. Materials Science (U.S.A.);
3. Materials in Electronics (U.S.A.),
4. Semiconductor Science and Technology (U.K.),
5. Solar Energy Materials and Solar Cells (U.S.A.),
6. Physica E(USA),
7. Physica B(USA),
8. Sensors and Actuators(USA) etc.

- **Authored One book published by Marcel and Dekker U.S.A; one book contribution, one review and over 70 original research contributions in international journals of repute.(see Annexure I)**
- **Invited speaker/Course Director/Organizer in a large number of international and national conferences in India and abroad.(see Annexure II)**
- **Visited a number of Universities and research organizations in U.S.A, Italy, Singapore, Malaysia, Japan etc.**

**10.1 List of Doctoral Thesis supervised: Total 17 Awarded and 4 working**

| <b>S. No.</b> | <b>Name</b> | <b>Thesis Title</b>  | <b>Year Awarded</b> |
|---------------|-------------|--|---------------------|
| 1             | A.J.N. Rooz | Development and Studies of Solar Cells                                 | 1989                |
| 2             | R.B.Gore    | Preparation and Characterisation of CdTe Films for Solar Cells         | 1991                |
| 3             | S.R.Kumar   | Development of Low Cost Thin Film Technologies For Some Semiconductors | 1991                |

|    |                        |  |      |
|----|------------------------|--|------|
| 4  | Jay Krishnan R         | Studies on II-VI Compound Semiconductors   | 1993 |
| 5  | Anita Arora            | Phase Transition and Mechanical Properties of Diluted Magnetic Semiconductors  | 1994 |
| 6  | Jaya P. Nair           | Thin Film Heterojunction Devices   | 1999 |
| 7  | Indu Gupta             | Development of Software and Interfacing Circuits for Control of Sophisticated Machines through Computers and Applications in Semiconductors Thin Films | 2000 |
| 8  | Poornima Swaroop       | Analysis of Structure of Energy Consumption and Dynamics and Antropogenic Emission   | 2000 |
| 9  | Nandu Chaure           | Studies of II-VI Compound Semiconductor Films and Heterojuncitons  | 2000 |
| 10 | Shweta Chaure          | Optical Properties of Semiconductor Nanomaterials  | 2003 |
| 11 | Javed Mazher           | Synthesis and Characterisation of II-VI Semiconductor Nanostructures   | 2003 |
| 12 | Dhirendra Gupta        | Synthesis and Characterisation of Multilayers  | 2004 |
| 13 | Jyoti Verma            | Synthesis and Characterisation of Semiconductor Films  | 2005 |
| 14 | Ragini Raj Singh       | Studies on Passivation of Mercury Cadmium Telluride for IR Detectors   | 2006 |
| 15 | Akhilesh Chandra Nayak | Studies on Electrodeposition Tecniques for Metallisation of Allumina Substrate and Nickel Barrier for Thermoelectric Coolers                           | 2007 |
| 16 | Diksha Kaushik         | Studies on Low Dimensional II-VI Semiconductor Compounds   | 2007 |
| 17 | Ajay Bharat Sharma     | Synthesis and Characterisation of II-VI Nanocrystalline Semiconductor Films  | 2007 |
| 18 | Madhulika Sharma       |  |      |
|    |                        |  |      |

## 10.2 Major Research Achievements

Leading researcher in electrodeposition of materials. Established electrodeposition as a technique to synthesize a wide variety of technologically important materials. Coauthored the first monograph in the field (Hand Book of Semiconductor Electrodeposition , Marcel Decker 1996.)

Developed for the first time, novel electrodeposition strategies such as selective electrodeposition for growing high purity compound semiconductor films from low purity precursors, nonaqueous electrodeposition technique for CdTe films , in situ characterization of electrodeposited semiconductors etc.

Developed a novel wet synthesis route for growing self organized quantum dots of ZnSe and other II-VI semiconductor, and established correlation between the structure size, strain and luminescence properties. .Demonstrated the application of this approach to the fabrication of thin films of nano crystalline CdSe, ZnSe, CdS and  $Zn_xCd_{1-x}Se$ .

Developed, a single bath electrodeposition technique for coherent multilayers of the type Cu/Co-Ni. Demonstrated the first successful application of pulse deposition to the fabrication of coherent multilayers with improved interfacial roughness using in-situ atomic force microscopy.

Developed from ab- initio, a research laboratory for growth and characterization of materials with facilities characterization including multimode and wet/vacuum/low temperature atomic force microscope, X- ray diffractometer with grazing angle attachment, Inductively coupled plasma emission spectrometer, Low temperature (10 K) characterization facility (optical, magnetic, optoelectronic and electrical properties), Luminescence spectroscopy down to Liquid nitrogen temperature, optical spectroscopy, thin film evaporation facility including rf sputtering, e beam evaporation under UHV ambient, programmable electrochemical work station etc.

Successfully developed, the process for thick copper metallisation and pattern generation on alumina substrates for thermoelectric coolers under a Defense Research Development Organisation sponsored project. The metallised substrates have been successfully tested to yield a temperature differential of 61 K with long term stability. Resistance to thermal stress between liquid nitrogen and boiling water temperature window has also been demonstrated.

Successfully developed process for nickel barrier coating for the semiconducting elements of the thermoelectric coolers.

Successfully developed for the first time, a novel electrochemical process for passivation of the mercury cadmium telluride detectors under the Defense Research Development Organization sponsored project. The process is expected to contribute to the development of focal plane arrays for satellite based thermal imaging, target recognition for defense application etc.

## ANNEXURE I

### LIST OF PUBLICATION OF R. K. PANDEY

#### ➤ BOOK

1. **Hand Book of Semiconductor Electrodeposition** R K Pandey, S. Chandra and S.N. Sahu., Marcel Dekker, USA 1996

#### ➤ BOOK CONTRIBUTIONS

1. Energy Sources: Problems and Remedies, in Foundation Course for the undergraduates, Indore University Publications, 1984.

#### ➤ REVIEW ARTICLES

1. "Semiconductor photoelectrochemical solar cells" S.Chandra and **R.K.Pandey** *Physica Status Solidi (a)* **72** (1982) 415.

#### ➤ RESEARCH PUBLICATIONS

1. "A Thin film solid state battery using NH Ag I superionic solids" S. Chandra, R.C.Agrawal and **R.K.Pandey** *Natl. Acad. Sc. Letter* **1** (1978)112.
2. "A Photoelectrochemical diode for solar energy conversion" S. Chandra and **R.K.Pandey**, *National Acad. Sci .(India) Annual No.*, (1978) 89.
3. "Superionic Solid Film II: Preparation and electrical conductivity of anion substituted silver iodide based superionic solid AG I PO" S.Chandra, R.C.Agrawal and **R.K.Pandey** *Phys. Stat. Solidi(a)* **57** (1980) 299.
4. "Solar Energy conversion using photoelectrochemical solar cells with low cost substrates" S.Chandra, R.C. Agrawal and **R.K.Pandey** *Solar Cells* **1** (1980) 367.
5. "A photoelectrochemical cell for solar energy conversion using electrodeposited CdSe films" S.Chandra, R.C.Agrawal and **R.K.Pandey** *Phys. Stat. Solid (a)* **59** (1980)737.
6. "Solar Energy conversion by photoelectrochemical cells using chemical bath deposited CdS films" S. Chandra, R.C.Agrawal and **R.K.Pandey** *J. Phys. D* **13** (1980) 1757.

7. "High purity electrodeposited CdSe films Preparation and application in solar cells" **R.K.Pandey**, A.J.N.Rooz in *International Conference on Physics and Technology of compensated semiconductors*, IIT, Madras (1985).
8. "Semiconductor heterostructures for photoelectrochemical solar cells" **R.K.Pandey**, A.J.N.Rooz and S.Lal Proc. Photon induced processes in chemical and biological systems, Published in *J. Scientific Res.* **13** (1986)1757.
9. "Efficient electrochemical photovoltaic cells using n-CdSe films Electrodeposited from low purity materials" **R.K.Pandey** and A.J.N. Rooz *J. Phys. D: Appl. Phy.* **19** (1986)917.
10. "Preparation, compositional, electrical, characterisation of n-CdSe Films Grown from low purity materials and application in electrochemical photovoltaic cells" **R.K.Pandey** and A.J.N. Rooz *Proc. Sol. Energy. Conv. Engineering Conf. (USA)* Am. Soc. Pub. P. (1986) 1309.
11. "Investigation of traps and minority carrier diffusion length in CdSe films" **R.K.Pandey**, R.B.Gore and A.J.N.Rooz *J. Phys. D.* **20** (1987)1059.
12. "Auger electron spectroscopic investigation of the influence of deposition parameters on the purity and stoichiometry of n-CdSe films electrodeposited from low purity materials" **R.K.Pandey**, A.J.N.Rooz and S.K.Kulkarni *Thin Solid Films* **51**, (1987) 150.
13. "Chemically formed CdZnSe photoanodes I: Auger electron spectroscopy and scanning electron microscope studies" **R.K.Pandey**, A.J.N.Rooz, S.R.Kumar and S.K.Kulkarni *J. Semicond. Sci. Tech.* **3** (1988)729.
14. "Chemically formed Cd Zn Se photoanodes II: Preparation, electrical characterisation, photoelectrochemical and solar cell studies" **R.K.Pandey**, A.J.N.Rooz and R.B.Gore *J. Semicond. Sci. Tech.* **3** (1988)733.
15. "A novel nonaqueous electroplating technique for CdTe films" R.B.Gore and **R.K.Pandey** *Thin Solid Films* **164** (1988) 255.
16. "Cathodic electrodeposition characteristics of CdTe films in a nonaqueous bath" **R.K.Pandey** and R.B.Gore *Extended Abstract Vol. Proc. of the 174th meeting of the Electrochem. Soc. Chicago, Illinois, USA, October 9-14* (1988).
17. "Investigation of deposition parameters for the nonaqueous electroplating of CdTe films and application in electrochemical photovoltaic cells" R.B.Gore, **R.K.Pandey** and S. K. Kulkarni *Solar Energy Materials* **18** (1989)159.

18. "Structure, composition and surface topology of cadmium telluride films fabricated by a new nonaqueous electroplating technique R.B.Gore, **R.K.Pandey** and S.K.Kulkarni *J. Appl. Phy.* **65** (1989) 2693.
19. "A modified selective electrodeposition technique for growing CdSe films for electrochemical photovoltaic solar cells" S.R.Kumar, A.J.N.Rooz and **R.K.Pandey** *Electrochem.* **5** (1989)711.
20. "Preparation and characterisation of nearly stoichiometric CdTe films from a nonaqueous bath" R.B.Gore and **R.K.Pandey** *Applied Surface Sci.* **48/49** (1991) 530.
21. "Photoelectrochemical and solar cell studies of n-CdSe film grown by repeated cycle of electrodeposition" **R.K.Pandey**, S.R. Kumar, A.J.N.Rooz and S.Chandra *Thin Solid Films* **1** (1991) 200.
22. "Composition surface morphology and structure of n-CdSe film prepared by a repeated cycle of electrodeposition" **R.K.Pandey**, S.R.Kumar, A.J.N.Rooz and S.Chandra *J.Mat. Sci.* **24** (1991)3617.
23. "Rapid thermal annealing of Cu-In/Se stacked layers" S.R.Kumar, R.B.Gore and **R.K.Pandey** *Semicond. Sci. Tech.* **6** (1991) 940.
24. "X-ray photoelectron spectroscopy and structure of the Cu-In alloy films" S.R.Kumar, S.K.Kulkarni and **R.K.Pandey** *Thin Solid Films* **161** (1992) 208.
25. "Preparation and properties of a Cu-In alloy precursor for CuInSe films" S.R.Kumar and **R.K.Pandey** *Sol. En. Mat.* **26** (1992) 149.
26. "Copper Indium films prepared from electrodeposited Cu-In/vacuum evaporated Se stacked layers" S.R. Kumar and **R K Pandey** *Bulletin of Indian Vacuum Society* **23** (1992) 25.
27. "A comparative study of the morphological and compositional trends in CdTe film galvanostatically deposited from an ethylene glycol based bath" **R.K.Pandey**, G.Razzini and L.P. Bicelli *Sol. Energy Mater.* **26** (1992) 285.
28. "Study of the CdTe electrodeposition from a nonaqueous bath" **R.K. Pandey**, S. Maffib and L.P.Bicelli *J. Materials Chemistry and Physics* **35** (1993)15.
29. "Properties of CuInSe films prepared by a rapid thermal annealing technique" S.R.Kumar, R.B.Gore and **R.K.Pandey** *Thin Solid Films* **109** (1993) 223.

30. "Evolution of the morphological, structure and composition evolution of CdTe films potentiostatically deposited from an ethylene glycol based bath" **R.K.Pandey**, S.Maffi and L.P. Bicelli *J.Materials Chem. and Physics* **37** (1994) 141.
31. "Rapid thermal annealing of multiple dip coated CdS films" Jayakrishnan R, Kumar S.R. and **R.K.Pandey** *Semicond. Sci. Tech.* **9** (1994) 97.
32. "Chracterisation and photovoltaic device application of dip coated rapid thermal annealed CdS films" Jayakrishnan R., Jaya P nair, Beena Annie Kuruvilla, S K Kulkarni and **R K Pandey** *Journal of Materials Science: Materials for Electronics* **7** (1996) 1993.
33. "Composition, structure and morphology of dip coated rapid thermal annealed CdS and nonaqueous electrodeposited CdTe" Jayakrishnan R., Jaya P. Nair, Beena Annie Kurvilla, S.K. Kulkarni and **R.K.Pandey** *Semicond. Sci. Technol.* **11** (1996) 116.
34. "Transport property studies on Ag<sup>+</sup> ion conducting composite electrolyte system (1-x) AgI:xSnO<sub>2</sub>" R C Agrawal, R Kumar and **R K Pandey** *Solid State Ionics: New Developments* Ed. BVR Chowdary et al., World Scientific, Singapore (1996) 499.
35. "Temperature dependence of transference number and ionic drift velocity on some silver halide systems" R C agrawal, R Kumar and **R K Pandey** *Solid State Ionics: New Developments* 493.
36. "Ionic drift velocity and mobility measurements on a quenched [0.75 AgI: 0.25 AgCl] mixed system or soloid solution" R C Agrawal, R K Gupta and **R K Pandey** *Solid State Ionics: New Developments* Ed. B V R Chowdary, World Scientific Singapore (1996) 481.
37. "Electrodeposition of ZnTe films" Nandu B Chaure, Jayakrishnan R., Jaya P Nair and **R K Pandey** *Semiconductor Science and Technology* **12**(1997) 1171.
38. "Effect of Cu-doping on the properties of ZnTe Films" Nandu B Chaure, Jayakrishnan R, Jaya P Nair and **R K Pandey** *Thin Solid Films* **324** (1997) 78.
39. "In-situ Sb-doped CdTe Films" Jaya P Nair, Jayakrishnan R, Nandu B Chaure and **R K Pandey** *Semiconductor Science and Technology* **13** (1998) 340.
40. "Investigation of Sb-doped CdTe films by PIXE, XPS and AFM" Jaya P Nair, Jayakrishnan R., Nandu B Chaure, Arun Lobo, S K Kulkarni and **R K Pandey** *Thin Solid Films* **347** (1999) 39.

41. "Deposition and characterisation of  $Cd_xHg_{1-x}Te$  Mo electroplated from a non-aqueous bath" Jaya P.Nair, R.Jayakrishnan, Nandu B.Chaure, S.Gokhale, Arun Lobo, S.K. Kulkarni and **R.K.Pandey** *Journal of Physics and Chemistry of Solids* **60**(1999)1693.
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48. "Layout Editor - A CAD Tool for Modelling VLSI Design. Indu Gupta and **R.K.Pandey** *Inst of Electronics and Telecom Engineers Review* **20** (2003) 541.
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53. "Self Assembled Nanocrystalline CdSe thin Films" Shweta Chaure,N.B.Chaure and R.K.Pandey *Physica E* **28** (2005) 439.
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63. "Highly Luminescent Inverted ZnS/CdS Core/Shell Quantum Dots" Madhulika Sharma, D. Gupta, D. Kaushik, A. B. Sharma, and R. K. Pandey *J. Nanosci. Nanotechnol.* **8** (2008) 3949.

64. "Study of Self-Organized CdS Q-Dots" Diksha Kaushik, Madhulika Sharm, A.B. Sharma and R.K. Pandey *Journal of Nanoscience and Nanotechnology* **8/8** (2008) 4303.
65. "Studies on Surface Processing and Passivation of p-HgCdTe using cadmium Sulfide films", **Ragini Raj Singh**, Diksha Kaushik, Madhulika Sharma and R.K.Pandey *Semiconductor Science and Technology*, **23** (2008) 015016.
66. "Cd<sub>1-x</sub>Zn<sub>x</sub>Te thin films formed by non-aqueous electrochemical route" N.B. Chaure, Shweta Chaure and R.K. Pandey *Electrochimica Acta* (In press) (2008).

## ANNEXURE II

### SOME IMPORTANT CONFERENCE ORGANISATION/PARTICIPATION

**Co Chairman,**

International Conference on Electroactive Polymers, February 22- 25, 2007, Goa, India.

**Platinum Jubilee Speaker**

Indian Science Congress Association 94 th session, Jan 3-7,2007, Annamalai Nagar, India.

**Invited Speaker**

National Conference on Advanced Materials and Devices, Guru Ghasi Das Univ Bilaspur, March 5-6, 2006.

**Invited Speaker**

92 Indian Science Congress,Jan 3-7,2005, Ahemdabad.

**Invited Speaker**

Extra Mural Lecture, M.S. University, Vadodara, "Self Assembled Quantum Dots" **Jan 8, 2005**

**Invited Speaker**

Invited Speaker, National Symposium on Advances in Materials Science, Gorakhpur University, India, March 17-19, 2005.

**Invited Speaker**

International Conference on Electroactive Polymers,Dalhousie, India, November 1-5, 2004.

**Invited Speaker**

Workshop on Recent Trends and Advances in Semiconductor Technologies, Gwalior, March 15-20, 2004.

**Invited Speaker**

DRDO conference on Nanostructured Materials, Jodhpur March 2-3, 2003 Jodhpur.

**Invited Speaker**

National Seminar on Nanomaterials, MN University Baroda May 7-8, 2003.

**Invited Speaker**

Workshop on Advanced Techniques For Characterisation of Materials, SSPL Delhi Dec 2002.

**Invited Speaker**

International Conference on Nanostructured Materials, Puri Jan 4-8, 2001, India.

**Conference Chairman and Organiser**

National Conference on Science & Technology of Nanomaterials & clusters. Bhopal Nov 23-25 2000

**Invited Speaker**

CEP Course on Preparation and Characterization of Materials, Spet. 4-15.2000. SSPL.

**Conference Chairman and Organiser**

XIV M.P. Young Scientist Congress, Bhopal, Feb, 1999.

**Invited Speaker**

National Conference on multilayers, Inter University Consortium for DAE Facility, Indore, Sept. 9-10, 1998

**Organiser**

National Conference on Science & Technology of Exotic Materials; Bhopal, June 5-6, 1998.

**Invited Speaker**

National Conference on Multilayers IUC, Indore 1998.

**Invited Speaker**

Training Workshop on Application of Computers; IIFM, Bhopal 1996.

**Convenor**

National Workshop on Sensors and Transducers, Bhopal Sponsored by MPCST & WRIC, Bhopal. Sept. 11-15. 1996

**Convenor**

National Workshop on Metrology for Total Quality Management. Sponsored by Metrology Society of India. August 17-18, 1996,

**Coordinator and Organiser**

National Workshop on Electrodeposition of Thin Films – Inter University Consortium for DAE Facilities, Indore. Jan. 9-14, 1995

**Invited Speaker**

Refresher Course on Solid State Physics at Sardar Patel Univ., Anand. Nov. 1994.

**Invited Speaker**

Workshop on Improvement of M.Sc. (Physics/Electronics) Laboratory Courses, IUC, Indore. Dec. 1993.

**Organiser and Course Director**

Experimental Workshop on Electrodeposition, Science and Technology; Kuala Lumpur, Malaysia. June 1993.

**Invited Speaker**

Novel Routes for Synthesis of Semiconductor Films, Inter University Consortium for DAE Facilities, Indore. March, 1993.

**Chief Instructor**

Asian Workshop on Solid State Ionics, BHU, Varanasi. Nov., 1992.

**Chief Instructor**

Asian Workshop on Solid State Ionics, BHU, Varanasi. Nov. 1992,

**Organiser**

First Asian Experimental Workshop on Solid State Ionics, BHU, Varanasi, Oct. 1992.

**UGC Visiting Faculty**

Delivered Two week lecture series on Semiconductor Physics and Devices, Sardar Patel University Anand, Feb., 1992.

**Invited Speaker**

Recent Trends in Polycrystalline Thin Films Heterojunction Solar Cells NPL, New Delhi. 10-11 Feb., 1992.

**Invited Speaker**

The Indian Science Congress Association Meeting Baroda. 1992 January, 3-8.

**Invited Speaker**

The Indian Science Congress Association Meeting, Baroda, 1992 January, 3-8.

**Invited Speaker**

5th International Conference on Solid Films and Surface, Providence, USA, August 13-17, 1990.

**Invited Speaker**

Workshop on Materials Science of Nonconventional Energy Sources, I.C.T.P. Trieste, Italy.

**Invited Speaker**

National Symposium on Chemical Routes for Trapping Solar Energy,  
IIT, Madras, 1988.

**Invited Speaker**

National Workshop on Digital Electronics and Microprocessors,  
Varanasi, December 15-29, 1986 .

**Invited Speaker**

Winter School on Microprocessor, BHU, Varanasi, Oct. 1986.

**Invited Speaker**

National Conference on Photon Induced Processes in Chemical and  
Biological Systems, BHU Varanasi June 1985.