PROFILE

Prof. Muhammad Abdul Wahab

A physicist, eager to understand the fundamentals of the subject. Interest in working for the development of minorities and weaker sections of the society particularly in the field of education and health.

Current Position

Professor and Head
Department of Physics, Jamia Millia Islamia (a central university),
Jamia Nagar, New Delhi- 110025, India.

Contact No. :+91-11-26324065 (R), +91-9999060262, +91-11-26984631 (O),
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E-mail ID : mawahab_ph@yahoo.com, mwahab@jmi.ac.in

Member: Anjuman Court, Jamia Millia Islamia, New Delhi-110025

Academic Qualification

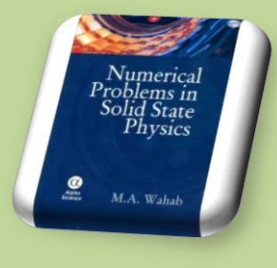
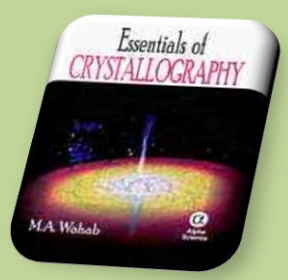
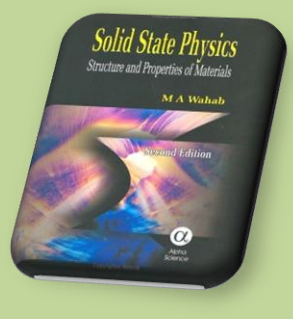
- B.Sc. (JMI), M.Sc. Physics (AMU), Ph.D. (Physics) University of Delhi, 1980

Employment Summary

- 1981 – 1985 as a Lecturer, Department of Physics, University of Jammu, JAMMU
- 1985 – 1989 as Lecturer, department of Physics, JMI, New Delhi.
- 1989 – 1998 as a Reader, Department of Physics, JMI, New Delhi
- 1998 – On wards as Professor, Department of Physics, JMI, New Delhi
- 8th August, 2009 – Took charge as Head, Department of Physics, JMI, New Delhi

Research & Teaching Experiences: 30 Years

Publication of Books

Name of the Book	Publisher	Edition
 **NUMERICAL PROBLEMS IN SOLID STATE PHYSICS**	**I. Narosa Publishing House Pvt. Ltd., New Delhi** **II. Alpha Science International Ltd. Oxford, U.K**	**First Edition 2011**
 **ESSENTIALS OF CRYSTALLOGRAPHY**	**I. Narosa Publishing House Pvt. Ltd., New Delhi** **II. Alpha Science International Ltd. Oxford, U.K**	**First Edition 2009**
 **SOLID STATE PHYSICS**	**I. Narosa Publishing House Pvt. Ltd., New Delhi** **II. Alpha Science International Ltd. Harrow, U.K**	**First Edition 1999** **Second Edition 2009**
COMMON PROBLEMS IN CRYSTALLOGRAPHY	**(Under Publication)** **I. Narosa Publishing House Pvt. Ltd., New Delhi**	**(Under Publication)**

Research Lab

XRD & Crystal Growth Lab, Department of Physics, JMI

Area of Research:

MATERIALS SCIENCE

- **Crystal Growth**
- **Characterization**
- **Polymer Science**
- **Polytypism**
- **Molecular Dynamics**

Research Facilities in the XRD & Crystal Growth Lab

- **Czochralski (CZ) & Bridgman Crystal Puller (Cambridge, England)**
- **Panalytical Powder X-Ray Diffractometer**
- **Impedance Analyzer**
- **Inverted Microscope**
- **Zone Refining Set up**
- **Indigenously fabricated VBT furnace**
- **Temperature Controller (Eurotherm)**
- **Platinum Crucible**
- **Constant Temperature Bath (water/oil)**
- **Double Distillation Plant**
- **Four Probe Setup**
- **Hall probe**
- **High Temperature Furnaces**
- **High precision electronic balance**

Ph.D.'s produced

Name of the Student/Year of Awarded	Ph.D titled	Current Position
 **MD. SHAKIR (2011)**	***"Experimental Studies on ZnSe, ZnTe chalcogenide and LPCCM, LAM, KDP, GP Nonlinear optical compounds"***	**Assistant Professor** *Department of Physics* *ARSD College, South Campus* *University of Delhi, New Delhi* ***shkirphy@gmail.com*** *09911769335*
 **SIDDHARTHA (2011)**	***"Studies of radiation effect in some selected polymers"***	**Post Doctoral Research Fellow (UGC)** *Department of Physics, Jamia Millia Islamia, New Delhi 110025* *(Res.): 3- Institutional Area Sector 4, R. K. Puram, New Delhi 110022* ***siddharthasingh1@gmail.com*** *09968162245, 011-26714303*
 **SUVEDA AARYA (2010)**	***"Studies of Radiation Induced Changes in Polymers"***	**Assistant Professor** *Department of Physics* *ARSD College, South Campus* *University of Delhi, New Delhi* ***suveda@gmail.com***
 **M.M.ABDULLAH (2010)**	***"Theoretical and Experimental Studies on GaSe, Ga_3Se_4 Chalcogenide Compounds"***	**Assistant Professor** Najran University, *Saudi Arabia* **margubabdullah@gmail.com**

MOHD. SOHAIL AHMAD (2007)	***"Theoretical Study of Polymorphic and Polytypic compounds"***	**Assistant Professor** *King Khalid University, Kingdom of Saudi Arabia* *sohailphysics@yahoo.co.in*
 **MOHD. AJMAL KHAN(2005)**	***"Study of Polytypism in Zinc Sulphide"***	**Assistant Professor** *King Khalid University, Kingdom of Saudi Arabia* *mkajmal@yahoo.com*
ASHRAF SHAH (1999)	***"Theoretical Study of Structural and Space Group Transformations in Close Paced Polytypic materials"***	**Assistant Professor** *King Abdulaziz University ,Kingdom of Saudi Arabia*
 **SHANDER AHMAD (1993)**	***"New model of Polytypism and experimental data interpretation of some typical close packed polytypic materials"***	**Scientist** *National Institute of Biomedical Innovation, JAPAN* ***shandar @nibio.go.jp*** *+81726419848*
	**Rajnikant Verma** **M.Phil (1982)**	**Professor** *Post Graduate Department of Physics & Electronics, University of Jammu, Jammu :rkantverma@rediffmail.com* *+91-191-2432051(o) +91-191-2552674(Res)*

Ph.D. Student working (Date of Registration)

Name of the Student/Year of Registration	Ph.D titled
Preeti Singh ***S.R.F. (UGC-RGNF)*** **17/2/2009**	***"Microscopic And X-Ray Diffraction Study Of CdI_2 Crystals With Different Concentration and Impurity Content"***

 **Mohd. Hasmuddin** **1/9/2009**	***"Effect of radiation on pure and doped BSO ($Bi_{12}SiO_{20}$) Crystals"*** ***Email: mhasmu@gmail.com***
 **B. Riscob** **25/3/2010**	***"Growth and Characterization of High-Energy Radiation Detection Single Crystal (BGSO) and Nonlinear Optical Single Crystals"*** ***Email: riscob@gmail.com***
 **Bashir Ahmad** ***Teacher Fellow*** **30/3/2010**	***"Characterizations of Radiation induced Modifications in Polymers"*** ***Email: bashirphdphy@gmail.com***
S.K. Raghuvanshi **2010**	***"Investigation of Radiation Induced Effect in Polymer"Email***
Uzma Khan **5/9/2011**	***"Synthesis, Characterization and radiation induced Modifications on Polymer composites"***
Sharief Ud- Din Khan ***Teacher Fellow*** **5/9/2011**	***"Synthesis, Characterization and effects of radiation on Polymer metal composites" Email***

 **Neelam Rani** ***JRF (UGC-CSIR)*** **5/9/2011**	***"Synthesis, growth and effect of irradiation studies on some technologically important amino acid nonlinear optical single crystals"*** ***Email:*** **neelamgill586@gmail.com**

Invited Talks

1. **STUDY OF CLOSE PACKING OF IDENTICAL SPHERES**
2. **CRYSTALS AND SYMMETRIES**

National Seminar on Crystallography organized by Department of Physics, University of Jammu, Jammu during 25th – 27th October, 2010

Personal Information

Date of Birth	01.08.1949
Nationality	Indian
Marital Status	Married
Passport no.	F- 0102963, Issued at Delhi (INDIA), Expiry date 23/8/2014
Present Address	235/108E, Ghaffar Manzil, Jamia Nagar, New Delhi 110025.(India)
Contact No.	+91-11-26324065 (R), +91-9999060262 (M), +91-11-26984631 (O), Fax. +91-11-26981753
E-mail ID	mawahab_ph@yahoo.com, mwahab@jmi.ac.in
Languages	Urdu, Hindi and English

Extra Curriculum Activity	Social activity
Chairman:	**SALVATION (NGO)** (Registered under Society Registration Act XXI of 1860) F-11/13, Street No 6, Joga Bai Extn, Okhla, New Delhi -110025 (India)
President:	**Al- Rahim Foundation (NGO)** (Registered under Society Registration Act XXI of 1860) 235/108E, Ghaffar Manzil, Jamia Nagar, New Delhi 110025, (India).
Hobbies:	Reading and Writing Books

List of Research Publications in International Journals

1. P.C. JAIN, **M. A. WAHAB** and G. C. TRIGUNAYAT: "Crystal structure of eight new cadmium iodide polytypes" Acta Cryst. B34 (1978) 2685.
2. **M. A. WAHAB** and G. C. TRIGUNAYAT: "Entropy contribution in determining the relative stabilities of polytypes" Indian J. of Pure and Appl. Physics, 18 (1980) 577.
3. **M. A. WAHAB** and G. C. TRIGUNAYAT: "Mode of layer displacement in MX2- type crystals", Solid State Commun. 36 (1980) 885
4. **M. A. WAHAB** and P. C. JAIN: "Errors in the reported structures of 3 cadmium iodide polytypes", Personal Communication
5. **M. A. WAHAB** and RAJNI KANT: "A comparative study of existing polytype notations with reference to cadmium iodide polytypes", Cryst. Res. Tech. 21 (1986) 239.
6. **M. A. WAHAB** and RAJNI KANT: "Polytypism in CdI2: A consequence of restrictions in close packed arrangements." Cryst. Res. Technol. 21 (1986) 243
7. **M. A. WAHAB** and G. C. TRIGUNAYAT: "Restrictions in the arrangements of molecular sheets in CdI2 and PbI2 polytypes", Acta Cryst. A36 (1980) 1013
8. **M. A. WAHAB,** "A simple approach to understand Polytypism in Cadmium iodide crystals." Advances in Physics of Materials, Ed. Z. H. Zaidi and M. Husain, Today and Tomorrow Printers and Publishers (1989) 103
9. **M. A. WAHAB** and G. C. TRIGUNAYAT: "Low Temperature X- Ray diffraction study of cadmium iodide crystals", Cryst. Res. Technol. 24 (1989) 355.

10. SHANDAR AHMAD and **M. A. WAHAB,** "Polytypism in MX2 compounds: A case of mixed equilibrium phases", Cryst. Res. Technol. 28- 3 (1993) 325.
11. SHANDAR AHMAD and **M. A. WAHAB,** "A statistical thermodynamics and growth restrictions (STGR) model of Polytypism with special reference to zinc sulphide", Cryst. Res. Technol. 28 - 6 (1993) 837
12. SHANDAR AHMAD and **M.A. WAHAB**, "STGR model and relation between growth rate and polytypism" Cryst. Res. Technol. 28 - 8 (1993) 1061
13. M. A. SHAH and **M.A. Wahab**, "Growth rate and symmetry of polytypes in MX- compounds", Journal of Materials Science Letters, 19, 2000, 1817 – 1820.
14. M. A. SHAH and **M.A. Wahab,** "Growth rate and symmetry of polytypes in MX2 – compounds", Journal of Materials Science Letters, 19, 2000, 1813 - 1816.17
15. P. Verma, P. H. Mokler, A. Brauning-Deminan, H. Brauning, E. Bedermann, S. Chatterjee, A. Gumberidze, S. Hagmann, C. Kohuharov, A. Orsic - Muthig, R. Reuschl, M. Schoffler, U. Spillmann, Th. Stohlker, Z. Stachura, S. Tashenov, **M. A. Wahab**, "Charge exchange and X-ray emission in 70 MeV/u Bi - Au collisions" Nuclear Instruments and Methods in Physics Research B 235 (2005) 309-314.
16. Characterization of ZnSe nanoparticles synthesized by microwave heating process. Mohd. Shakir, S.K. Kushwaha, K.K. Maurya, G. Bhagavannarayana**, M.A. Wahab, Solid State Communication, 149 (2009) 2047-2049.**
17. Dielectric behavior and ac electrical conductivity analysis of ZnSe chalcogenide nanoparticle. Mohd. Shakir, B.K. Singh, R.K. Gaur, Binay Kumar, G. Bhagavannarayana**, M.A. Wahab Chalcogenide Letters, 6 (2009) 655-660.**
18. Atomistic study of elastic constants and thermodynamic properties of zinc – blende CuBr S.Ahmad, **M. A. Wahab,** Crystal Research and Technology 44, 7, 741–746, 2009
19. Effect of 1.25 MeV gamma irradiation in α-phased PVDF: Suveda Aarya, Siddhartha, A. K. Srivastava, A. Saha, **M. A. Wahab**; Nuclear Instruments and Methods in Physics Research B 267 (2009) 3545–3548
20. Growth and Observation of Nonlinear optical and ferroelectric behavior in Glycine Picrate: An astonishing observation in a centrosymmetric Crystal. Mohd. Shakir**,** S.K. Kushwaha, K.K. Maurya, Manju Arora, B.K. Singh, Binay Kumar, **M.A. Wahab** and G. Bhagavannarayana 14th National Seminar on Crystal Growth, 10-12th March-2010
21. Unidirectional Growth of L-Proline Cadmium Chloride Monohydrate Single Crystal and its Characterization for structural, vibrational, LDT, optical and dielectric properties Mohd. Shakir, S.K. Kushwaha, K.K. Maurya, R.C. Bhatt, Rashmi, **M. A. Wahab** and G. Bhagavannarayana, **Materials Chemistry & Physics, 120 (2010) 566–570.**

22. Enhancement of SHG, optical and dielectric properties due to improvement in crystalline perfection by annealing in L-asparagine monohydrate single crystal Mohd. Shakir, S.K. Kushawaha, K.K. Maurya, Sumeet Kumar**, M.A. Wahab** and G. Bhagavannarayana **Journal of Applied Crystallography, 43 (2010) 491-497.**
23. Growth and characterization of GaSe single crystal M.M. Abdullah, G. Bhagavannarayana, **M.A. Wahab, Journal of Crystal Growth,** 312 (2010) 1534-1537.
24. Structural, optical and mechanical studies on pure and Mn^{2+} doped L-asparagine monohydrate single crystals Mohd. Shakir, V. Ganesh, **M.A. Wahab**, G. Bhagavannarayana, and K. Kishan Rao **Materials Science and Engineering B, 172 (2010) 9-14.**
25. Unidirectional growth of L-asparagine monohydrate single crystal: first time observation of NLO nature and its other studies of crystalline perfection, optical, mechanical and dielectric properties Mohd. Shakir**,** B. Riscob, K.K. Maurya, V. Ganesh, **M.A. Wahab** and G. Bhagavannarayana **Journal of Crystal Growth, 312 (2010) 3171–3177.**
26. Controlled Synthesis and Structural Characterization of Polycrystalline GaSe ; M.M. Abdullah, G. Bhagavannarayana**, M.A. Wahab Journal of Material Science** Volume 45, Number 15, 4088-4092, (2010).
27. Remarkable enhancement in crystalline perfection, Second Harmonic Generation Efficiency, Optical transparency and laser damage threshold in KDP crystals by L-threonine doping. S.K. Kushawaha, Mohd. Shakir, K.K. Maurya, A.L. Shah**, M.A. Wahab** and G. Bhagavannarayana **Journal of Applied Physics, 108 (2010) 033506-7.**
28. Molecular Dynamics Simulation of ZnS using Interatomic Potentials: M. Ajmal, Badriah S. A. Sultan , nadir bouarissa, **M.A. Wahab**; Proceedings of the Fifth Saudi Physical Society Conference AIP conf. Proc. 1370,220-224 (2011)
29. Influence of L-Alanine doping on crystalline perfection, SHG efficiency, optical and mechanical properties of KDP single crystals Mohd. Shakir**,** V. Ganesh, B. Riscob, **M.A. Wahab** and G. Bhagavannarayana **Physica B: Condensed Matter, 406 (2011) 3392–3397.**
30. Structural, optical and electrical properties of ZnSe semiconductor nanoparticles : Mohd. Shakir**,** Siddhartha, G. Bhagavannarayana and **M.A. Wahab Chalcogenide Letters, 8 (2011) 435 – 440.**
31. Effect of L-Threonine (LT) doping on structural, optical, microhardness, etching and dielectric properties of KDP single crystal Mohd. Shakir**,** V. Ganesh, B. Riscob, K.K. Maurya, K. Kishan Rao**, M.A. Wahab** and G. Bhagavannarayana **International journal of pure and applied physics, 7 (2011) 13–24.**
32. Synthesis, Growth and Characterization of a new organic material: Glycine Glutaric acid B. Riscob, Mohd. Shakir, J. Kalyana Sundar, S. Natarajan, M.A. Wahab, G. Bhagavannarayana: **Spectrochemica Acta A: Molecular & Biomolecular spectroscopy, 78 (2011) 543-548.**

33. Formation of blisters in Kapton polymer by the effect of 1.25MeV Gamma Irradiation **Siddhartha**, Suveda Aarya, Monika Mishra, A.K. Srivastava, M.A. Wahab**, Journal of applied polymer science, USA Volume 120**, **Issue 5**, **pages 2928–2937**, **5 June 2011**
34. Comparative study on bis (thiourea) cadmium acetate crystals using HRXRD, etching, UV-visible, microhardness, dielectric and DSC techniques V. Ganesha, Ch. Snehalatha Reddy, Mohd. Shakir**, M.A. Wahab**, G. Bhagavannarayana and K. Kishan Rao **Physica B: Condensed Matter, 406 (2011) 259-264.**
35. Structural and Optical Properties of Co60 Gamma rays irradiated Polyethersulfone (PES) Polymer Siddhartha, Suveda Aarya, A.K. Srivastava, Mohd. Shakir**, M.A. Wahab International journal of Physics & Applications, 3 (2011) 7-22.**
36. Enhancement of dielectric properties in some aromatic polymers due to γ-irradiation; Siddhartha**,** Suveda Aarya, Bashir Ahmad, **M.A. Wahab: Materials Sciences** and **Applications, USA. (2011) In Press paper** ID : 7700471
37. Structural and Dielectric Studies of Pure and Mn Doped GaSe: M.M. Abdullah, M. Ajmal Khan, G. Bhagavannarayana, **M. A. Wahab**: Science of Advance Materials Vol: 3,1-6, 2011
38. Effect of Co60 Gamma-radiation on Physical and Chemical properties in Polyethyleneterephthalate (PET) Polymer **Journal of applied polymer science,** USA, Siddhartha, Suveda Aarya, A.K. Srivastava, Bashir Ahmad **M.A. Wahab (In Press)** (2011) DOI 10.1002/app.36397
39. Effect of Gamma Radiation on the Optical properties of UHMWPE polymer: S.K.Raghuwansi, Bashir Ahmad**,** Siddhartha**,** A. K. Srivastava**, M. A. Wahab**; **Nuclear Instruments and Methods in Physics Research** (2011) **Accepted**
40. Allotropic modification induced by Co^{60} radiation on the structural and optical properties of aromatic polymers: Siddhartha, Suveda Aarya, A. K. Srivastava, Monika Mishra, **M.A. Wahab: Advanced Materials Research Vols**. 383-390 (2012) pp 3264-3271© (2012) Trans Tech Publications, Switzerland
41. Effect of gamma radiation on the structural and optical properties of Polyethyleneterephthalate (PET) Polymer: Siddhartha, Suveda Aarya, S.K.Raghuwansi A. K. Srivastava, **M.A. Wahab: Radiation Physics and Chemistry** (2011) doi:10.1016/j.radphyschem.2011.12.023
42. Growth, optical, mechanical and thermal studies of diglycine cadmium chloride single crystal: B. Riscob, Mohd. Shakir, V. Ganesh, N. Vijayan, **M.A. Wahab**, G. Bhagavannarayana: **Thermal Analysis and Calorimetry** (2011) doi: 10.1007/s10973-011-2110-8
43. Effect of γ-irradiation on optical and chemical properties of CR-39 polymer, S.K.Raghuwansi**,** Siddhartha**,** A. K. Srivastava**, M. A. Wahab: Radiation Effects and Defects in Solids - Manuscript ID GRAD-2011-0132.R1(In Press) 2012**

List of papers published in proceeding.

1. **M. A. WAHAB,** "Introduction to the phenomenon of polytypism", Presented in the 4th Nile Winter College, Univ. of Khartoum, SUDAN (Feb.1992). Published in the proceeding.

2. **M. A. WAHAB,** "High and Low temperature X- ray diffraction and mode of layer displacements in the cadmium iodide crystal" Presented in the 4th Nile Winter College, Univ. of Khartoum, SUDAN (Feb. 1992). Published in proceeding

3. Large Size Unidirectional Growth and Characterization of L-Proline Cadmium Chloride Monohydrate Single Crystal **Mohd. Shakir**, S.K. Kushwaha, K.K. Maurya, R.C. Bhatt, Rashmi, M.A. Wahab, G. Bhagavannarayana P-AM/68, XVth International conference on the physics of semiconductor devices, Jamia Millia Islamia, New Delhi, Dec. 15-19th, 2009, p-422-426

4. Gamma ray Induced Modification of Poplyethersulfone Polymer: **Siddhartha**, Suveda Aarya, A.K. Srivastava, **M.A. Wahab**: Published in Fifteenth International workshop on The Physics of Semiconductor Devices **(IWPSD)** at Jamia Millia Islamia, New Delhi during December 15-19, 2009

5. **M.A. Wahab,** "Growth rate and symmetry of polytypes in closed packed polytypic compounds", presented at symposium on Fundamentals of Crystal Growth held at ANNA University, Nov. 6 – 7, 2001. Published in proceeding.

6. **M.A. Wahab**, An indirect study of growth and symmetry in close packed polytypic compounds. 32nd national Seminar on Crystallography, Jammu University. Oct. 24-26, 2002

7. H. Braeuning, P. Verma, P. Mokler, **M.A. Wahab**, Ionisation and Fragmentation of C60 by 20 MeV/u Xe53+: presented at the EAS (Energetic Atomic Collisions) held at Riezlern Germany, February 2003.

8. E Testa, P Verma P Mokler, **M.A. Wahab**, "Deceleration of highly charged heavy ions in a crystal held at Genova, Italy, July 4-9, 2004.

9. P. Verma P. H. Mokler, A. Brauning-Deminan, H. Brauning, S. Chatterjee, A. Gumberidze, S. Hagmann, C. Kozhuharov, R. Reuschl, M. Schoffler, U. Spillmann, A. Orsic - Muthig T. Stohlker, S. Tashenov, Z. Stachura and **M. A. Wahab,** Projectile Charge state dependence of vacancy transfer in heavy ion heavy atom collisions at the National Conference on Atomic and Molecular Physics (NCAMP) held at PRL Ahmedabad, Dec 19-23, 2004.

10. P Verma, P H Mokler , A Brauning- Demian, H Brauning, M. Schoffler, F. Bosch, T Stohlker, S Hagmann, D Liesen, C Kozhuharov, S Toleikis, D Banas, S Tachenov, A Orsic-Muthig Spillmann, D Sierpowski, Z Stachura, **M.A. Wahab**, "Vacancy Transfer in inner shells of Super heavy Quasimolecules" Presented at the ECAMP-VIII held at Rennes, France, July 6 – 10 , 2004.

11. Co60- Gamma Rays Irradiation Effects in Polyvinylidenefluoride (PVDF) Polymer Suveda Aarya, A. K. Srivastava and **M. A. Wahab**, 35th National Seminar on Crystallography, 22-24 February 2006, NPL, New Delhi. Published in proceeding.

12. ^{60}Co gamma irradiation effects in UHMWPE polymer; Suveda Aarya, Siddhartha, A. K. Srivastava, A. Saha **M. A. Wahab**; published in second International conference on Electroactive polymers (ICEP-2007) Feb, Goa, India

13. Growth of L-Proline Cadmium Chloride monohydrate (LPCCM) single crystal and its characterization by HRXRD, FT-Raman and Dielectric studies Mohd. Shakir**,** S. K. Kushwaha, Rashmi, K. K. Maurya, **M.A. Wahab** and G. Bhagavannarayana 14th APAM and ILTP workshop, P-43, 2008.

14. Large Size Unidirectional Growth and Characterization of L-Proline Cadmium Chloride Monohydrate Single Crystal Mohd. Shakir, S.K. Kushwaha, K.K. Maurya, R.C. Bhatt, Rashmi, **M.A. Wahab**, G. Bhagavannarayana P-AM/68, XVth International conference on the physics of semiconductor devices, Jamia Millia Islamia, New Delhi, Dec. 15-19th, 2009, p-422-426

15. Gamma ray Induced Modification of Poplyethersulfone Polymer: Siddhartha, Suveda Aarya, A.K. Srivastava, **M.A. Wahab**: Published in Fifteenth International workshop on The Physics of Semiconductor Devices **(IWPSD)** at Jamia Millia Islamia, New Delhi during December 15-19, 2009