ASHWINI KUMAR
7th September 1985

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CARRER OBJECTIVE

Ph.D. in Engineering Science with three years of post-doctoral research and teaching experience looking for an exciting opportunity in teaching and research where I can expand my knowledge and skills.

RESEARCH INTERESTS

Thin film transistors, Flexible electronics, III-V Compound semiconductor based devices, Gas sensors, bio sensors, MEMS

PREVIOUS APPOINTMENTS

National Post-Doctoral Fellow, Department of Metallurgical Engineering and Material Science, IIT Bombay, Mumbai, India from 5th December 2017 to 8th December 2020.

Visiting Scientist, Center for Nano Science and Technolgy of the " Istituto Italiano di Tecnologia" in Milan, Italy from 16th March 2019 to 15th September 2019.

Temporary Faculty, Department of Electronics & Communication Engineering, National Institute of Technology Karnataka Surathkal, Mangalore, India during July –December2017.

Junior Visiting Scientist, Technical Physics Division, Bhabha Atomic Research Centre, Mumbai, India during March 2017- July 2017.

HIGHER EDUCATION

Institute	Bhabha Atomic Research Centre / Homi Bhabha National Institute Mumbai	
Doctor of Philosophy	Field : Organic Semiconductor	Year of Completion : March, 2017
Dissertation	*Organic Chemiresistive and Organic Field Effect Transistor Gas Sensor*	
Project Focus	Charge transport and gas sensing properties of Organic Semiconductor based Devices viz., Gas sensors and Organic Field Effect Transistors on flexible substrates.	
Master of Technology	Specialization: Integrated Circuit Technology	Year of Completion : May, 2011
Institute	University of Hyderabad,	CGPA 8.46 /10
Dissertation	*Design and Simulation of One Dimensional Photonic Band gap Reflector and Resonator in Coplanar Waveguide* The design has been carried out in ADS layout window and the simulation has been done using 3-D EM simulator Momentum.	
Subjects	Semiconductor Device Physics, IC Fabrication Techniques, VLSI Design Technology, RF / Microwave ICs, Process, Device & Circuit Modelling and Simulation, Advanced Digital Design, MEMS, Special IC Design. Dissertation.	
Master of Science	Course: Electronics	Year of Completion: June, 2007
Institute	Devi Ahilya University Indore	CGPA 8.00 /10

Dissertation	*Scrolling Message Display using AT89C51 microcontroller* It is a working model which will display on LCD the desired message entered on keyboard. KEIL Compiler has been used to generate hex code which can be directly burned into microcontroller's ROM.
Subjects	Signals and Systems, Network Theory, Programming Languages, Analog and Digital Electronics, Hardware Description Languages, Computer Network, Electromagnetic Theory, Analog and Digital Communication, Microwave Engineering, CMOS Technology and VLSI Design, Control Systems, Microcontroller and Embedded System, Mobile Computing, Digital Signal Processing.

B.Sc. (Honours)	Course : Electronics	Year of Completion : July 2005
College/ University	Deen Dayal Upadhyaya College, University of Delhi	Percentage 58.4

PUBLICATIONS

1. "Modeling of Gate bias controlled NO_2 response of the PCDTBT based Organic Field Effect Transistor Gas Sensor", Ashwini Kumar, P.Jha, Ajay Singh, A.K. Chauhan, S.K. Gupta, D.K. Aswal, K.P. Muthe and S.C. Gadkari, *Chemical Physics Letters*, **2018**,*698*,7-10.

2. "Fast Response and High Sensitivity of ZnO Nanowires - Cobalt Phthalocyanine Heterojunction based H_2S Sensor", Ashwini Kumar, S. Samanta, A. Singh, M. Roy, S. Singh, S. Basu, M. M. Chehimi, K. Roy, N. Ramgir, A. K. Debnath, D. K. Aswal, S. K. Gupta, M. Navneethan, Y. Hayakawa, *ACS Applied Materials & Interfaces*, **2015**, *7*, 17713-17724.

3. "Room temperature detection of H_2S by flexible gold–cobalt phthalocyanine heterojunction thin films", Ashwini Kumar, N. Joshi, S. Samanta, A. Singh, A. K. Debnath, A. K. Chauhan, M. Roy, R. Prasad, K. Roy, M. M. Chehimi, D. K. Aswal, S. K. Gupta, *Sensors and Actuators B: Chemical*, **2015**, *206*, 653-662.

4. "Interface mediated semiconducting to metallic like transition in ultrathin Bi_2Se_3 films on (100) $SrTiO_3$ grown by molecular beam epitaxy", Anil K. Debnath, R. Prasad, Ajay Singh, Soumen Samanta, Ashwini Kumar, Anil Bohra, Debarati Bhattacharya, Saibal Basu, Niraj Joshi, Dinesh K. Aswal and S. K. Gupta, *RSC Advances*, **2015**,*5*, 87897-87902.

5. "One step synthesis of highly ordered free standing flexible polypyrrole-silver nanocomposite films at air–water interface by photopolymerization", Ajay Singh, Zakaria Salmi, Purushottam Jha, Nirav Joshi, Ashwini Kumar, Philippe Decorse, Hélène Lecoq, Stephanie Lau-Truong, Dinesh K. Aswal, Shiv K. Gupta and Mohamed M. Chehimi, *RSC Advances*, **2013**,*3*, 13329-13336.

6. "Photo-induced synthesis of polypyrrole-silver nanocomposite films on N-(3-trimethoxysilylpropyl)pyrrole-modified biaxially oriented polyethylene terephthalate flexible substrates", Ajay Singh, Zakaria Salmi, Nirav Joshi, Purushottam Jha, Ashwini Kumar, Hélène Lecoq, Stephanie Lau, Mohamed M. Chehimi, Dinesh K. Aswal and Shiv K. Gupta, *RSC Advances*, **2013**, *3*, 5506-5523.

7. "Bending stress induced improved chemiresistive gas sensing characteristics of flexible cobalt-phthalocyanine thin films", A. Singh, Ashwini Kumar, A. Kumar, S. Samanta, N. Joshi, V. Balouria, A. K. Debnath, R. Prasad, Z. Salmi, M. M. Chehimi, D. K. Aswal, S. K. Gupta, *Applied Physics Letters*, **2013**, *103*, 132107-4.

8. "Flexible cobalt-phthalocyanine thin films with high charge carrier mobility", A. Singh, A. Kumar, Ashwini Kumar**,** S. Samanta, A. K. Debnath, P. Jha, R. Prasad, Z. Salmi, S. Nowak, M. M. Chehimi, D. K. Aswal, S. K. Gupta, *Applied Physics Letters*, **2012**, *101*, 222102-5.

CONFERENCE PAPERS

1. "Electron accumulation/depletion at $F_{16}CoPc/Znq_3$ heterojunction: Kelvin probe and charge transport study", Ashwini Kumar, R. Prasad, A. Kumar, S. Samanta, A. Singh, A. K. Debnath, D. K. Aswal, S. K. Gupta, *AIP Conference Proceedings*, **2013**, *1512*,770-771.

2. "Flexible Au-CoPc heterojunction film for H_2S detection", Ashwini Kumar, S. Samanta, Ajay Singh, A. K. Debnath, R. Prasad, Kallol Roy, M. M. Chehimi, D. K. Aswal, S. K. Gupta, *Organic Devices : The Future Ahead*, March 3-6, **2014**, BARC Mumbai.

3. "Cobalt Phthalocyanine / ZnO Nanowire Heterojunction Film For H_2S Sensor", Ashwini Kumar, Ajay Singh, Soumen Samanta, Mainak Roy, R. Prasad, A. K. Debnath, D. K. Aswal, *AIP Conference Proceedings*, **2015**, 1665, 050193-3.

4. Poly [N-9′ heptadecanyl-2, 7-carbazole-alt-5, 5-(4′7′-di-2-thienyl 2′, 1′, 3′ benzothiadiazole)] based Chemical Field Effect Transistor for selective detection of NO_2", Ashwini Kumar, P. Jha, S. Samanta, A. Singh, A. K. Debnath, K. Roy, D. K. Aswal, *15th European Conference on Molecular Electronics*, September 1-5, **2015**, University of Strasbourg, Strasbourg, France.

5. "Studies on different Configurations of Cobalt Phthalocyanine based Flexible Organic Field Effect Transistor", Ashwini Kumar, P. Jha, S. Samanta, A. Singh. A .K. Debnath, D. K. Aswal, S. K. Gupta, *AIP Conference Proceedings*, **2016**, *1731*, 110001-3.

WORKSHOP / TRAINING

1. School on Nanoscale Electronic Transport and Magnetism: Fundamentals to Applications held at Harish Chandra Research Institute, Allahabad, India during February 22 – March 02, 2016.

2. INUP Familiarization Workshop on Nanofabrication Technologies held at IIT Bombay, Mumbai during May 26 – May 28, 2014.

3. Industrial Training during June 1- June 30, 2006 at SCIENTECH Technologies Pvt. Ltd. Indore (M.P), India where I have seen manufacturing and calibration of CROs, function generators, Communication trainers.

ACHIEVEMENTS

1. Qualified National Eligibility Test for lectureship Conducted by UGC New Delhi thrice; in June 2012, December 2012 and December 2013 with percentage of marks respectively as 65.71, 59.43 and 64.57.
2. Qualified Graduate Aptitude Test in Engineering (GATE) 2010 in Electronics and Communication Engineering and was ranked among the top 8.4 % of all the candidates who took that examination.
3. Qualified National Talent Search Examination (NTSE) conducted by CBSE New Delhi in the year 2001.
4. Participated and could get into the merit list in Junior Mathematics Olympiad (JMO) conducted jointly by Kendriya Vidyalaya Sangathan (KVS) and Bhagalpur Board of Higher Mathematics in the year 2001.

AWARDS

1. National Post Doctoral Fellowship from Science and Engineering Research Board, Government of India
2. Unique DAE Graduate Fellowship for five years (September 2011 – August 2016) for pursuing Ph.D. at DAE units in the country.
3. HBNI-Travel Grant for attending Conference abroad in 2015
4. Travel Grant by CICS Chennai for attending Conference abroad in 2015.

5. Travel Award by MRSI –Mumbai Chapter for attending Conference abroad in the year 2015.
6. The 'best student of the batch' award for overall performance in the class at Kendriya Vidyalaya No.2, Gaya in the year 2002.

MEMBER OF PROFESSIONAL BODIES

Life time member of Materials research Society of India (MRSI) - Mumbai Chapter (Membership No.: LMB2601)

EXTRA –CURRICULAR ACTIVITIES

1. Acted as Volunteer twice; first in DAE Solid State Physics Symposium held at IIT Bombay during December 3-7, 2012 and next in BRNS sponsored conference " Organic Devices : The Future Ahead" during March 4-6, 2014 held at BARC Mumbai.
2. Won the Technical Quiz Competition held during Annual Fest 2006 at School of Electronics, DAVV, Indore.

SKILLS / EXPERTISE

Instruments	AFM, SUSS MJB4 Mask Aligner, Wafer scriber, Spin coater, VNA, Stylus Profilometer, Thermal Evaporation and Sputtering Systems for thin film deposition.
Design and Simulation Tools	AutoCAD, ADS, Empire, IC-CAPP, Aldec-Riviera, KEIL, Model Sim, Cadence, Synopsys (VCS &DC), Synplify Pro, MATLAB, System Generator, Xilinx (ISE10.1, Chip scope Pro, EDK).
Programming Languages	C, C++, FORTRAN, VHDL, Verilog, 8085, 8086 & 8051 Assembly Languages
Operating System	Windows 98/2000/XP/Vista/7/8,Linux.

REFERENCES

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