

**Dr. AMIT SEHGAL**

S/O Mr. K. C. Sehgal  
 D.O.B. : 01 - 12 - 1979  
 Tel. No. - 27565218 (R), **9873035542** (M)  
 Email : [amitsehgal112@yahoo.com](mailto:amitsehgal112@yahoo.com)  
 URL: <http://people.du.ac.in/~asehgal/>

Address: D - 42, Prashant Vihar,  
 Rohini,  
 Delhi - 110085

**10 years 2 months of teaching** experience at **University of Delhi**  
**14+ years of research experience** (Modeling of Semiconductor Devices)  
 With **28 publications** produced in journals and conferences

**EDUCATIONAL QUALIFICATIONS:**

Course	Year	Board /Univ.	Subjects	Specialization	%age	Division
Ph. D.	Jan. 2007	University of Delhi	Electronic Science	Microelectronics		Defended Successfully
M. Sc.	2002	University of Delhi	Electronics	Electronics	69.57%	First
B. Sc. (Hons)	2000	University of Delhi	Electronics	Electronics	75.67%	First
10+2	1997	C.B.S.E.	Physics, Chemistry, Maths, English, Computer Sc.		76%	First

**Thesis** title "**Poly-crystalline Silicon Thin Film Transistors: Modeling, Simulation and Characterization**" is submitted to Univ. of Delhi.

Cleared **UGC NET December 2002** Examination and qualified for both Junior Research Fellowship and Lectureship.

**One Orientation Course attended and completed successfully in May - June, 2008**

**Two Refresher Courses attended and completed successfully**

- **Research Methodology from CPDHE, University of Delhi from December 12 - 31, 2011**
- **Physics from Academic Staff College, Jawaharlal Nehru University, Delhi from September 16 - October 11, 2013.**

**COMPUTER AND MICROPROCESSOR KNOWLEDGE:**

- Can operate computer efficiently in Windows, MS Office, Internet, MathCAD, Microsoft Origin, Adobe softwares viz. Acrobat Professional, Adobe Dreamweaver and Adobe Photoshop etc.
- Can install Windows, Linux and Mac OS efficiently on Personal Computers and Laptops.
- Can install any software on any operating system.
- Installed XAMPP Server on Personal Computer and installed dummy MOODLE environment on that server.
- Computer Languages known = FORTRAN, Pascal
- Machine and Assembly Languages known = 8085, 8086
- Have done programming on various simulators and emulators eg: ATLAS simulator, 8085 emulator, 8086 emulator, Microsoft Assembler MASM etc.
- Contributed e-learning material in Physics subject as E-LABS on <http://vle.du.ac.in> education portal designed and developed by Institute of Life Long Learning, University of Delhi
- Designed and developed personal and company websites eg: <http://people.du.ac.in/~asehgal/> , <http://drtinamangla.appspot.com> and <http://csakg.com>
- Designed and developed a National Workshop website <http://people.du.ac.in/~asehgal/fsos/>

**ACHIEVEMENTS:**

- Biography listed in **Marquis Who's Who in World 25th Anniversary Edition** issue.
- Biography listed in **Marquis Who's Who in Asia** December 2006 issue.
- Biography listed in **Marquis Who's Who in Science and Engineering** September 2006 issue.
- **Won Design Contest** in National Workshop on VLSI Chip Design on July 18, 2013 at Bhaskara College of Applied Sciences, University of Delhi conducted by JB Tech India Research and Training Centre, Greater Noida, U.P.
- Awarded title of **Champion** in **D-LITE Course** conducted by Campus of Open Learning (COL), University of Delhi and Edinburgh College, UK at COL, Keshav Puram on November 18-21, 2013.

- Project titled "Designing and Optimization of Auto-Tracking Solar Energy based Energy Conversion Module for Rechargeable Appliances" funded under Innovation Project Scheme, University of Delhi was awarded with **Best Display and Best Innovation Idea** in Antardhvani Festival (University of Delhi Festival) 2015.
- Awarded **Content Developer and Content Designer** for Good Practices Stall of Hansraj College, University of Delhi at Antardhvani Festival February 20-22, 2015.

#### MEMBERSHIPS:

- **SID (Society For Information Display)** Member (2006 – 2007)
- **Society of VLSI and Microelectronics** Member (Life Member)
- **Material Research Society Singapore** Member (2007 – 2009)

#### EXPERIENCE:

##### Work Exposure

Name of the Post	Nature of the Job	Duties	Name of Organization	Period From	Period To
Assistant Professor (Electronics)	Permanent	To teach undergraduate students	Hansraj College, University of Delhi	01-01-06	Till date
Lecturer (Electronics)	Permanent	To teach undergraduate students	Hansraj College, University of Delhi	17-02-05	31-12-05
Fellow Physics	Deputation	To generate e-learning content	Institute of Life Long Learning, University of Delhi	15-04-10	14-04-11
Visiting Faculty (Computer Science)	Temporary	To teach undergraduate students	Sri Guru Gobind Singh College of Commerce, University of Delhi	08-01-10	30-04-13
Visiting Faculty (Computer Science)	Temporary	To teach undergraduate students	Hansraj College, University of Delhi	17-07-05	12-04-10
Visiting Faculty (Computer Science)	Temporary	To teach undergraduate students	Shyama Prasad Mukherjee College, University of Delhi	12-12-08	27-03-09
Visiting Faculty (Computer Science)	Temporary	To teach undergraduate students	Shyama Prasad Mukherjee College, University of Delhi	01-09-08	05-11-08
Visiting Faculty (Computer Science)	Temporary	To teach undergraduate students	Indraprastha College of Women, University of Delhi	09-01-07	26-04-07
UGC – JRF	Temporary	Research	Dept. of Elec. Sc., Univ. of Delhi (South Campus)	01-02-04	16-02-05
Project JRF	Temporary	Research	Dept. of Elec. Sc., Univ. of Delhi (South Campus)	12-02-03	31-01-04

Working on research topic "**Modeling, Simulation & Characterization of Semiconductor Devices (especially poly-silicon Thin Film Transistor and Nano-scale MOSFETs)**" with Prof. R. S. Gupta (supervisor) at Dept. of Elec. Sc., Univ. of Delhi (South Campus), N. Delhi -21.

#### Administrative Experience

##### Year 2014 – 2015

Member– Finance Committee  
 Member– Music Society  
 Member– PBAS Committee  
 Convener– Departmental Students Society  
 Member– Departmental Purchase Committee  
 Member– Departmental Administrative Committee  
 Member– Departmental Infrastructural Development Committee

##### Year 2012 – 2013

Member– Finance Committee

##### Year 2013 – 2014

Member– Finance Committee  
 Member– Portal Committee  
 Member– Department Workload Committee  
 Member– Departmental Laboratory Infrastructural Development  
 Presiding Officer – Students Union Elections

##### Year 2011 – 2012

**Secretary– Staff Association**

Member- Seminar Committee  
Convener- Departmental Students Society  
Member- Departmental Laboratory Infrastructural  
Development  
Presiding Officer - Students Union Elections

Member- Portal Committee  
Member- Seminar Committee  
Presiding Officer - Students Union Elections

#### **Year 2010 – 2011**

ON DEPUTATION Fellow- Physics

#### **Year 2009 – 2010**

Member- Finance Committee  
Member- Canteen Committee  
Member- Portal Committee  
Convener- Admission Committee (for 2nd cut-off  
list admissions)  
Member- Departmental Purchase Committee  
Member- Departmental Infrastructural  
Development Committee  
Presiding Officer - Students Union Elections

#### **Year 2008 – 2009**

Member- Admission Committee & B.Sc. (Honors)  
Electronics Admission In-charge  
Member- Canteen Committee  
Member- Portal Committee  
Convener- Department Student Society  
Member- Departmental Purchase Committee  
Presiding Officer - Students Union Elections

#### **Year 2007 – 2008**

Convener- Student Welfare Committee  
Member- Finance Committee  
Member- Portal Committee  
Convener- Departmental Purchase Committee  
Member- Department Time Table Workload  
Committee  
Presiding Officer - Students Union Elections

#### **Year 2006 – 2007**

Member- Student Welfare Committee  
Member- Departmental Purchase Committee

#### **Research Experience**

Published **28** research articles in international/national journals and conferences. (List of Publications in **Appendix A**)

Doing research work on topics

- "Modeling, Simulation & Characterization of Short Geometry Poly-silicon Thin Film Transistor"
- "Modeling, Simulation & Characterization of MOSFETs with quantum mechanical effects for ULSI applications"

**from September, 2002 onwards till date.**

#### **Projects**

- Completed project titled "**Designing and Optimization of Auto-Tracking Solar Energy based Energy Conversion Module for Rechargeable Appliances**" as project investigator under Innovation Project Scheme, University of Delhi.
- Completed project titled "**Fabrication of Porous Silicon and Study of its Resistive Behavior under different Environmental Conditions**" for the partial fulfillment of award of degree of M. Sc. in Electronics under guidance of Dr. V. K. Jain (Add. Director / Scientist G SSPL) and Prof. R. M. Mehra (Univ. of Delhi) at Solid State Physics Laboratory, Ministry of Defence, Timar Pur, New Delhi.
- Completed project titled "**Designing and Testing of Successive Approximation Digital Voltmeter by interfacing with 8085 Microprocessor Kit**" for the partial fulfillment of award of degree of B. Sc. (Hons) Electronics at Electronics Laboratory, Keshav Mahavidyalaya, University of Delhi, Keshav Puram, New Delhi.
- Designed software based project titled "**Telephone Billing in Pascal Programming**" for the award of 10+2 passing certificate.

**(AMIT SEHGAL)**

## Appendix A

### List of Publications

#### International/Indian Journals

##### Published

1. "Optimization of gate stack MOSFETs with quantization effects", Tina Mangla, **Amit Sehgal**, Manoj Saxena, Subhasis Haldar, Mridula Gupta and R. S. Gupta, *Journal of Semiconductor Technology and Science*, Vol.4, No.3, September 2004, pp. 228-239. (ISSN 1598-1657)
2. "Temperature dependence on electrical characteristics of short geometry poly – crystalline silicon thin film transistor", **Amit Sehgal**, Tina Mangla, Mridula Gupta and R. S. Gupta, *Solid State Electronics*, Vol.49, No.3, March 2005, pp. 301-309.
3. "Sub threshold analysis and drain current modeling of poly-silicon thin film transistor using green's function approach" **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, *IEEE Transactions on Microwave Theory and Techniques*, Vol.53, No. 9, September 2005, pp. 2682-2687.
4. "Physics-based algorithm implementation for characterization of gate-dielectric engineered MOSFETs including Quantization effects", Tina Mangla, **Amit Sehgal**, Manoj Saxena, Subhasis Haldar, Mridula Gupta and R. S. Gupta, *Journal of Semiconductor Technology and Science*, Vol.5, No.3, September 2005, pp. 159-167.
5. "Physics based threshold voltage extraction and simulation for poly-crystalline thin film transistors using a double-gate structure", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, *Semiconductor Science and Technology*, Vol.21, March 2006, pp.370-377.
6. "Enhancement in performance of poly-crystalline thin film transistors with gate dielectric and work-function", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, *Thin Solid Films*, Vol.54, No.1-2, 2006, pp. 55-58.
7. "Analytical modeling of the kink regime of a short channel polycrystalline silicon thin film transistor", Sonia Chopra, **Amit Sehgal** and R. S. Gupta, *International Journal of Electronics*, Vol.93, No.5, May 2006, pp. 279-289.
8. "Enhancement in performance of sub-100nm MOSFETs using gate stack architecture", Tina Mangla, **Amit Sehgal**, Mridula Gupta and R. S. Gupta, *International Journal on Microwave and Optical Technologies*, Vol.1, No.1, June 2006, pp. 106-113.
9. "Modeling and simulation of poly-crystalline silicon thin film transistor for improved gate transport efficiency", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, *International Journal on Microwave and Optical Technologies*, Vol.1, No.2, August 2006, pp. 411-416.
10. "Modeling challenges in sub-100nm gate stack MOSFETs" Tina Mangla, **Amit Sehgal**, Mridula Gupta and R. S. Gupta, *Semiconductor Science and Technology*, Vol.21, No.10, October 2006, pp. 1609-1619.
11. "Modeling Aspects of sub-100nm MOSFETs for ULSI device applications", Tina Mangla, **Amit Sehgal**, Mridula Gupta and R. S. Gupta, *IEEE Transactions on Electron Devices* Vol.54, No.1, Jan 2007, pp. 68-77.
12. "Multi-material gate poly-crystalline thin film transistors: Modeling and simulation for an improved gate transport efficiency", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, *Thin Solid Films* Vol.516, No.8, February 2008, pp. 2162-2170.
13. "Poly-crystalline silicon thin film transistor: a two-dimensional threshold voltage analysis using Green's function approach", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, *Journal of Semiconductor Technology and Science*, Vol.7, No.4, December 2007, pp. 289-300.

#### International/Indian Conferences

##### Published

14. "Temperature dependent threshold voltage modeling of short geometry poly Si TFT", **Amit Sehgal**, Tina Mangla, Mridula Gupta and R. S. Gupta, National Symposium on Advances in Microwaves and Lightwaves (**NSMAL-2003**), 13-14 October, University of Delhi, South Campus, New Delhi, India, 2003, pp. 116-119.
15. "Temperature dependent electrical characteristics of short geometry Poly Si TFT for high frequency applications", **Amit Sehgal**, Tina Mangla, Mridula Gupta and R. S. Gupta, National Conference on Radio Science in India (**INCURSI – 2003**), 27-29 November, National Physical Laboratory (NPL), New Delhi, India, 2003, p. 42.
16. "Impact and Optimization of dielectric gate stack structure for MOSFETs design reliability", Tina Mangla, **Amit Sehgal**, Mridula Gupta and R. S. Gupta, National Conference on Radio Science in

- India (**INCURSI-2003**), 27-29 November, National Physical Laboratory (NPL), New Delhi, India, 2003, p. 41.
17. "Two dimensional analytical model of fully depleted poly-crystalline silicon thin film transistor", **Amit Sehgal**, Tina Mangla, Mridula Gupta and R. S. Gupta, Thin Film Transistor Technologies VII Symposium, 2004 Joint International Meeting of ECS, 3-8 October, Honolulu, Hawaii, 2004.
  18. "Sub-threshold analysis for poly-silicon thin film transistor using Green's function approach", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, Asia Pacific Microwave Conference (**APMC-2004**), 15-18 December, New Delhi, India, 2004, pp. 126-137.
  19. "Impact of gate stack architecture on MOSFETs including quantum mechanical effects", Tina Mangla, **Amit Sehgal**, Mridula Gupta and R. S. Gupta, Asia Pacific Microwave Conference (**APMC-2004**), 15-18 December, New Delhi, India, 2004, pp. 189-190.
  20. "Enhancement in performance of poly-crystalline thin film transistors with gate dielectric and work-function", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, 3<sup>rd</sup> International Conference on Materials for Advanced Technologies, (**ICMAT-2005**), 3-8 July, Singapore, 2005, pp. 6-7.
  21. "Modeling and simulation of poly-crystalline silicon thin film transistor for improved gate transport efficiency", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, 10<sup>th</sup> International Symposium on Microwave and Optical Technologies (**ISMOT-2005**), 22-25 August, Fukuoka, Japan, 2005, pp. 410-413.
  22. "Poly-crystalline silicon thin film transistor: Modified Schottky gate contact for enhanced gate transport efficiency", **Amit Sehgal**, Tina Mangla, Sonia Chopra, Mridula Gupta and R. S. Gupta, XIII International Workshop on Physics of Semiconductor Devices (**IWPSD-2005**), 13-17 December, National Physical Laboratory (NPL), New Delhi, India, 2005, pp. 1040-1044.
  23. "Threshold voltage model for short-channel MOSFETs with quantum effects", Tina Mangla, **Amit Sehgal**, Mridula Gupta and R. S. Gupta, XIII International Workshop on Physics of Semiconductor Devices (**IWPSD-2005**), 13-17 December, National Physical Laboratory (NPL), New Delhi, India, 2005, pp. 1030-1034.
  24. "Conventional Scaled Transformation Ratio: A failure to predict accurate device characteristics for sub-100nm gate stack MOSFETs", R. S. Gupta, Tina Mangla, **Amit Sehgal** and Mridula Gupta, National Conference on Recent Advancements in Microwave Technique and Applications (**Microwave-2006**), 6-8 October, University of Rajasthan, Jaipur, 2006.
  25. "Improving the performance of poly-silicon thin film transistor for switching and driver circuitry", **Amit Sehgal**, Tina Mangla, Mridula Gupta and R. S. Gupta, The 9<sup>th</sup> Asian Symposium on Information Display (**ASID-2006**), 8-12 October, Habitat World at Indian Habitat Centre, New Delhi, 2006, pp.400-403.
  26. "Physics Based Threshold Voltage Extraction And Simulation For Double-Gate Sub-100nm MOSFETs", **Amit Sehgal**, Tina Mangla, Mridula Gupta, R. S. Gupta, 4<sup>th</sup> International Conference on Materials for Advanced Technologies, (**ICMAT-2007**), 1-6 July, Singapore, 2007, pp. 52.
  27. **IEEE Sustainability Conference 2009**, Computer Society Chapter, IEEE Delhi Section, held at HMR Institute of Technology and Management, Delhi, INDIA.
  28. "Sub 100nm Double Gate MOSFETs: A Study of Technological Defects and Carrier Quantization Effects", Amit Sehgal, Ritesh Gupta, Mridula Gupta and R. S. Gupta, 12<sup>th</sup> International Symposium on Microwave and Optical Technologies (**ISMOT-2009**), 16-19 December, Delhi, India, 2009.

### **Workshops**

1. Attended and successfully completed Electrawork 2009 **workshop** at Acharya Narendra Dev College, University of Delhi from June 01-12, 2009.
2. Attended and successfully completed ICT Tier I Champions **workshop** by Microsoft at Institute of Lifelong Learning, University of Delhi from August 31 to September 11, 2009.
3. Attended and successfully completed Integrating Multiple Technologies to Support Teaching and Learning Seminar cum **Workshop** at University of Delhi South Campus from September 24-26, 2009.
4. **Convener** of the seminar organized in the college in the year 2008-2009.
5. **Resource Person** for Tier II ILLL ICT Workshop at ILLL (For Administrative Staff), University Of Delhi.
6. **Resource Person** for Tier II ILLL ICT Workshop at PGDAV (Eve.) College, University Of Delhi.
7. **Resource Person** for Tier II ILLL ICT Workshop at Shivaji College, University of Delhi.
8. **Resource Person** for Tier II ILLL ICT Workshop at S.G.T.B. Khalsa College, University of Delhi.
9. **Resource Person** for Tier II ILLL ICT Workshop at Shyama Prasad Mukherjee College, University of Delhi.
10. **Resource Person** for Tier II ILLL ICT Workshop at Keshav Mahavidyalaya, University of Delhi.

11. **Resource Person** for Tier II ILLI ICT Workshop at Shaheed Bhagat Singh (Eve.) College, University Of Delhi.
12. **Resource Person** for Tier II ILLI ICT Workshop at Shri Guru Gobind Singh College of Commerce, University of Delhi.
13. **Resource Person** for Tier II ILLI ICT Workshop at Shyam Lal College, University of Delhi.
14. **Resource Person** for Tier II ILLI ICT Workshop at Indraprastha College for Women, University of Delhi.
15. Attended And Successfully Completed **Workshop** on 3-D Animation and Design Visualization organized by MHRD, Govt. of India, Autodesk at Institute of Lifelong Learning, University Of Delhi from June 28 To July 02, 2010.
16. Attended and successfully completed **Mini-Colloquia** on Compact Modelling Techniques for Nanoscale Devices and Circuit Analysis at University of Delhi South Campus sponsored by IEEE Electron Device Society from March 14-15, 2012.
17. Attended and successfully completed Science Academies **Lecture Workshop** On Frontiers in Science & Engineering - Opportunities for Graduates at University of Delhi South Campus sponsored by Indian National Science Academy (INSA) from February 17-18, 2012.
18. **Resource Person** in Refresher Course in Information Technology at B. P. S. Mahila Vishwavidyalaya, Khanpur Kalan, Sonipat in May-June, 2012.
19. **Jury Member** in INNOVATION IN SCIENCE PURSUIT FOR INSPIRED RESEARCH (INSPIRE) 2<sup>nd</sup> National Level Exhibition and Project Competition (NLEPC) at Delhi by Department of Science & Technology, Ministry of Science and Technology, Government of India from October 21-23, 2012.
20. **Jury Member** in INNOVATION IN SCIENCE PURSUIT FOR INSPIRED RESEARCH (INSPIRE) 3<sup>rd</sup> National Level Exhibition and Project Competition (NLEPC) at Delhi by Department of Science & Technology, Ministry of Science and Technology, Government of India from October 8-10, 2013.
21. Attended And Successfully Completed **National Workshop on VLSI Designing using Verilog** conducted by Bhaskra College of Applied Science, University of Delhi from July 16-18, 2013.
22. Attended And Successfully Completed **D-LITE Course** conducted by Campus of Open Learning (COL), University of Delhi and Edinburgh College, UK at COL, Keshav Puram on November 18-21, 2013.
23. **Resource Person** in Challenges in Physics Teaching and Evaluation at B. P. P. S. Teachers Training Centre, Pitampura, Delhi on 27 November, 2013.
24. **Resource Person** in workshop **Applications of LASER in Biotechnology** at Hansraj College on December 16-17, 2013.
25. **Convener and Resource Person** in National workshop **Fluorescence Studies of Organic Structures** at Hansraj College sponsored by Department of Biotechnology, Ministry of Science and Technology, Government of India under Star College Scheme on September 26-27, 2014.
26. Attended and successfully completed **Training Course on Web designing using HTML and Dreamweaver CS5** at Delhi University Computer Center, North Campus from July 28 – August 03, 2014.
27. **Jury Member** in INNOVATION IN SCIENCE PURSUIT FOR INSPIRED RESEARCH (INSPIRE) 4<sup>th</sup> National Level Exhibition and Project Competition (NLEPC) at Delhi by Department of Science & Technology, Ministry of Science and Technology, Government of India from October 6-8, 2014.