CURRICULUM-VITAE

Present Address:

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Dr Ashish Mathur

Career objective

To build a professional career in field of micro/nano technology which offers opportunities to exhibit my skills and acquire new knowledge.

EDUCATIONAL QUALIFICATION

- ➤ Completed online certificate course on "Operations Management" from Wharton, University of Pennsylvania in 2015.
- ➤ Ph.D (A study of the growth and fabrication of carbon nanotube arrays in microfluidic channels and their application in micro-particle separation for biosensing devices) from NIBEC, University of Ulster, Jordanstown campus, Belfast, U.K. in 2011.
- ➤ M.Tech (Nanotechnology) from Amity Institute of Nanotechnology, Amity University, Noida, India in 2007.
- ➤ M.Sc (Electronics) from CSJM University, Kanpur, India in 2005.
- ➤ **B.Sc** (**Electronics**) from CSJM University, Kanpur, India in 2003.
- Completed 'O' Level from Dept. of Electronics (DOEACC) in 2001
 (<u>Subjects</u>: Information Technology, Programming in 'C', Business Systems.)
- Completed 'A' Level from Dept of Electronics (DOEACC) in 2002.

 (Subjects: Database management system, Computer Organization, Data Communication & Networking, System Analysis, Data Structure, JAVA, and Programming in C/C++) (This course is equivalent to Bachelor's degree in India)
- ➤ Intermediate Passed from CBSE Board in 2000 in Science stream.
- ➤ High School Passed from CBSE Board in 1998.

WORK EXPERIENCE

- Currently working as **assistant professor (Grade-II)** in Amity institute of nanotechnology at **Amity University**, Noida, India (since Feb 2013)
- Worked as **research associate at NIBEC**, University of Ulster, Jordanstown campus, Belfast, U.K, (from July 2010-Dec 2012).
- Teaching at graduate/post-graduate level in university of Ulster. This includes taking lectures/tutorials/labs (2007-2012), as **teaching assistant**.
- Worked as a **computer instructor** for undergraduates and post- graduates at "ANTECH computer institute", India for more than 2 years.
- Worked as a **computer teacher** for high-school students at "Soney Lal Patel senior secondary school", India for 4 months.
- Worked as a senior sales manager and head of technical team of hardware engineers at "Computer Vatika", India for more than 1 year.
- Worked as a technical support executive for "Sky broadband" at Teletech (U.K.) for 6 months.

ACADEMIC ACHEIVEMENTS

- **Transferred technology** to a company for milk adulteration test kit worth INR 30 Lacs
- Selected as **student of the year** in 2011 in PhD graduation.
- Secured 1st Position in the University with **CGPA 9.60** in M.Tech
- Secured **1**st Position in DAV College for B.Sc. (Electronics) during Academic Year 2000-2003.
- Secured 'A' grade in final examination of DOEACC in 'A' level.
- Secured 3rd position in 6th National Children Science Congress in 1998.

PROFESSIONAL MEMBERSHIP

- 1) Member of Institute of Institute of Electrical and Electronics Engineers (**IEEE**)
- 2) Member of the Institutions of Engineering and Technology (IET)
- 3) Lifetime member Northern Ireland Biomedical Engineering Society (NIBES)

PROFESSIONAL RESPONSIBILITIES AT AMITY

- 1) Member of Board of Studies (BoS)
- 2) Member placement committee for Nanotechnology students
- 3) Alumni relations coordinator
- 4) Member QAE / IQAC (Quality assurance)
- 5) Played important role in WASC / NAAC / BSI accreditation team at Amity University.

PERSONAL DETAILS

Date of Birth : 13th April 1982

Sex : Male

Nationality : Indian

Contact Number : +91-9711202697 (M)

Languages Known : English, Hindi

Hobbies : Astrology and Meditation

Bibliography

Published papers

- [1] Tweedie M., Soin N., Roy S. S., Kumari P., **Mathur A**., Mahony C., Papakonstantinou P.,and McLaughlin J. A.D. (2008), *The use of nanotube structures in reducing the turn-on voltage in micro-discharges and micro-gas sensors*. proceedings SPIE, 7037
- [2] **Mathur, A,** Tweedie, M, Roy, SS, Maguire, PD and McLaughlin, JAD (2009) *Electrical and Raman Spectroscopic Studies of Vertically Aligned Multi-Walled Carbon Nanotubes.* **Journal of nanoscience and nanotechnology,** 9 7
- [3] **Mathur, A,** Roy, SS, Tweedie, M, Mukhopadhyay, S, Mitra, SK and McLaughlin, JAD (2009) *Characterisation of PMMA microfluidic channels and devices fabricated by hot embossing and sealed by direct bonding.* **Current applied physics**, 9 6
- [4] **Mathur, A,** Wadhwa, S, Byrne, JA, Roy, SS and McLaughlin, JAD (2009) *Experimental Demonstration of Hydrophobicity Variation in Carbon Nanotubes by Surface Modifications.* **e-Journal of Surface Science and Nanotechnology**, 7 . pp. 334-336. ISSN 1348-0391
- [5] Mukhopadhyay, S, O'Keeffe, P, Mathur, A, Tweedie, M, Roy, SS and McLaughlin, JAD (2009) Effect of Surface Modification on laminar Flow in Microchannels Fabricated by UV-Lithography. e-Journal of Surface Science and Nanotechnology, 7. pp. 330-334. ISSN 1348-0391

- [6] **Mathur, A,** Roy, SS, Dickinson, C and McLaughlin, JAD (2010) *Effect of thin aluminum interlayer on growth and microstructure of carbon nanotubes*. **Current applied physics**, 10, 407
- [7] Mukhopadhyay, S, Roy, SS, **Mathur, A,** Tweedie, M and McLaughlin, JAD (2010) Experimental study on capillary flow through polymer microchannel bends for microfluidic applications. **Journal of Micromechanics and Microengineering**, 20 5
- [8] **Mathur, A,** Roy, SS, Hazra, KS, Misra, DS and McLaughlin, JAD (2010) *Growth of carbon nanotube arrays using nanosphere lithography and their application in field emission devices.* **Diamond and Related Materials**, 19, 914
- [9] **Mathur, A,** Roy, SS and McLaughlin, JAD (2010) *Transferring vertically aligned carbon nanotubes onto a polymeric substrate using a hot embossing technique for microfluidic applications.* **Journal of The Royal Society Interface,** 7, 1129
- [10] Waghmare, P, **Mathur, A,** Roy, SS, Mitra, SK and McLaughlin, JAD (2008) "Numerical simulation for geometry optimization of CNT based filters" **Proceedings** of ECI International Conference on Heat Transfer and Fluid Flow in microscale
- [11] **Mathur, A,** Roy, SS, Hamad, EH and McLaughlin, JAD (2010) "Carbon nanotube arrays as a filter in microfluidic channels for bio-sensing applications" **MRS fall 2009 meeting proceedings** 1205-L09-12
- [12] **Mathur A,** Roy, SS, Tweedie, M, Hazra K. S., Dickinson, C, Misra D. S., Mitra S. K., and McLaughlin, JAD (2011) "A comparative study of the growth, microstructural and electrical properties of multiwall CNTs grown by thermal and microwave plasma enhanced CVD methods:" **Physica E**, 44 1

- [13] Hazra K S, Rafiee J, Rafiee M, **Mathur A**, Roy S S, McLauhglin JAD, Koratkar N, and Misra D S (2011) *Controlled Thinning of Multi-layer Graphene to Mono-Layer Graphene by Plasma Treatment:* Nanotechnology 22
- [14] Mukhopadhyay, S, Roy, SS, **Mathur, A,** D'Sa, RA, Holmes, RJ and McLaughlin, JAD (2011) *Effects of nanoscale surface modifications on capillary flow in PMMA microfluidic devices* **Nanoscale Research Letters. 6, 411**
- [15] Wadhwa, S, Rea, C, O'Hare, P, **Mathur A,** Burke, GA, Roy, SS Byrne, J, Meenan B, and McLaughlin, JAD (2011) Comparative In Vitro cyto toxicity study of titania and carbon nanotubes on human lung epithelial cells **Journal of Hazardous Materials**, 191, 56
- [16] Mathur, A, Roy, SS, Ray, SC, Dickinson, C, and McLaughlin, JAD (2011) Enhancement of field emission characteristics of carbon nanotubes on oxidation J. Nanoscience and Nanotechnology, 11 8.
- [17] **Mathur, A,** Wadhwa S., Roy, SS, Hazra K. S., Ray S.C., Misra D. S., Mitra S. K., and McLaughlin, JAD (2012) *Oxygen plasma assisted end-opening and field emission enhancement in vertically aligned multiwall carbon nanotubes* **Mat. Chem. Phys.** 134, 425
- [18] **Mathur, A,** Roy, SS, Ray, SC, Dickinson, C, and McLaughlin, JAD (2012) "Growth and micro-structural characterisation of highly oriented vertically aligned MWCNT on various substrates produced by thermal CVD" **Adv. Sci. Lett.** 7, 21
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- [20] Ray, SC, Tetana Z N, Erasmus R, **Mathur A** and Coville N J (2013) *Bonding Configurations in Carbon Spheres and Nitrogen Doped Carbon Spheres: Raman and X-ray Photoemission Spectroscopy Studies*, **International Journal of Energy Research** 38, 444
- [21] Mukhopadhyay, S, Banerjee, JP, **Mathur, A,** Tweedie, M, McLaughlin, JAD, and Roy, SS, (2015) Experimental studies of surface-driven capillary flow in PMMA microfluidic devices prepared by direct bonding technique and passive separation of micro-particles in microfluidic laboratory-on-a-chip systems, **Surface Review and Letters** 22 1550050
- [22] Wadhwa S, **Mathur A,**. Hamilton J. W. J, Dunlop P. S. M., and Byrne J. A., (2015) *Photo-Electrochemical Properties of Anodised Titania Nanotube Arrays Annealed in Nitrogen Atmosphere*, **Advanced Science, Engineering and Medicine** 7 10
- [23] Bhattacharya G, **Mathur A**, Pal S, McLaughlin, JAD, and Roy, SS (2016) Equivalent Circuit Models and Analysis of Electrochemical Impedance Spectra of Caffeine Solutions and Beverages Int. J. Electrochem. Sci 11 6370
- [24] Narang J, Malhotra N, Singhal C, **Mathur A**, *Krishna PNA* and Pundir CS (2016) Detection of alprazolam with a lab on paper economical device integrated with urchin like Ag@ Pd shell nano-hybrids **Materials Science and Engineering:** C, in press
- [25] Narang J, Malhotra N, Singhal C, **Mathur A**, Chakraborty D, Anil A, Ingle A, and Pundir CS, (2017) *Point of care with micro fluidic paper based device incorporated with nanocrystal of Zeolite –GO for electrochemical sensing of date rape drug* **Biosensors and Bioelectronics** 8 17
- [26] Narang J, Singhal C, **Mathur A**, Khanuja M, Varshney A, Garg K, Dahiya T, and Pundir CS, (2017) *Lab on paper chip integrated with Si@GNRs for electroanalysis of diazepam* **Analytica Chimica Acta**, in press

- [27] Bhattacharya G, Sas S, Wadhwa S, **Mathur A**, McLaughlin, JAD, and Roy, SS (2017) Aloe vera assisted facile green synthesis of reduced graphene oxide for electrochemical and dye removal applications **RSC Advances**, in press
- [28] McLister A, Mathur A, Davis J, (2017) Wound diagnostics: Deploying electroanalytical strategies for point of care sensors and smart dressings Current opinion in electrochemistry, in press

Conference presentations

- [1] Tweedie, M, Roy, SS, **Mathur, A,** Soin, N, Kumar, S and McLaughlin, JAD Growth of Vertically Aligned Multiwalled Carbon Nanotubes from Co Catalyst on Si by Microwave Plasma CVD for Light/Heat Emitting Applications (HAMR Heat Assisted Magnet Recording). In: **3rd International Conference on Nanomaterials and Nanomanufacturing**, Dublin 2007
- [2] Tweedie, M, Soin, N, Kumari, P, Roy, SS, **Mathur, A,** Mahony, CMO, Papakonstantinou, P and McLaughlin, JAD *The use of nanotube structures in reducing the turn-on voltage in micro-discharges and micro-gas sensors art. no.* 70370Z. In: **Carbon nanotubes and associated devices**, San Diego, USA, 2008
- [3] **Mathur, A,** Roy, SS and McLaughlin, JAD "Electrical and Raman spectroscopic studies of vertically aligned multi-walled carbon nanotubes" In: **MPA conference** in Cambridge University, UK 2008
- [4] Mathur, A, Roy, SS, Kiran, S, Hazra, KS, Misra, DS and McLaughlin, JAD Growth of carbon nanotubes arrays using nanosphere lithography and their application in field emission devices. In: 20th European Conference on Diamond, Diamond-Like Materials, Carbon Nanotubes and Nitrides, Athens, Greece 2009

- [5] Mathur, A, Roy, SS and McLaughlin, JAD Integration of carbon nanotube arrays in microfluidic channels for blood analytes separation and detection. In: International Workshop on Nanotechnology-enables Sensors & Diagnostics, Dublin 2009
- [6] Mathur, A, Roy, SS, Hazra, KS, Misra, DS and McLaughlin, JAD Patterned growth of carbon nanotubes arrays and their application in field emission devices. In: International Workshop on nanotechnology-enables Sensors & Diagnostics, Dublin 2009
- [7] **Mathur, A**, Mukhopadhyay, S, Hamad, E, Roy, SS and McLaughlin, JAD "Integration of carbon nanotube arrays in microfluidic channels for blood analytes separation and Detection" at **International workshop on nanotechnology-enables sensors & diagnostics**, DCU, Dublin 2009.
- [8] Mathur, A, Roy, SS, Kiran, S, Hazra, KS, Misra, DS and McLaughlin, JAD "Carbon nanotubes based micro/nano structures for sensing and emission applications" In: International workshop on nanotechnology-enables sensors & diagnostics, DCU, Dublin 2009.
- [9] **Mathur, A,** Roy, SS and McLaughlin, JAD *Integration of vertically aligned CNTs onto polymeric microfluidic devices using hot embossing.* In: **UKSB 8th Annual Conference,** Belfast, United Kingdom 2009 (**Won best poster award**)
- [10] **Mathur, A,** Wadhwa, S, Byrne, JA, Roy, SS and McLaughlin, JAD "Experimental demonstration of hydrophobicity switching in CNTs by surface modifications" In: **ICSFS conference** at Trinity college Dublin 2009

- [11] **Mathur, A,** Roy, SS, Tweedie, M, Mukhopadhyay, S, Mitra, SK and McLaughlin, JAD "Characterization of PMMA microfluidic channels and devices fabricated by hot embossing and sealed by direct bonding" In: **ICSFS conference** at Trinity college Dublin 2009
- [12] Mukhopadhyay, S, O'Keeffe, P, **Mathur, A,** Tweedie, M, Roy, SS and McLaughlin, JAD "Effect of surface modification on laminar flow in microchannels fabricated by UV lithography" In: **ICSFS conference** at Trinity college, Dublin 2009
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- [15] **Mathur, A**, Mukhopadhyay, S, Hamad, E, Roy, SS and McLaughlin, JAD "Carbon nanotubes based microfluidic system for microparticle separation and sensing applications" In: **3rd CNT@Cambridge Symposium**, Cambridge University, UK 2009
- [16] Mukhopadhyay, S, **Mathur**, **A**, Roy, SS and McLaughlin, JAD (2010) *Effect of diamond-like carbon coating on the wettability of polymeric microchannels*. In: **European Conference on Nanofilm**, Liege, Belgium 2010

- [17] Roy, SS, **Mathur, A**, Hamad, E, and McLaughlin, JAD "Carbon nanotubes based microfluidic system for microparticle separation and sensing applications" In: **e-MRS spring meeting,** France 2010
- [18] Mathur, A, Mukhopadhyay, S, Hamad, E, Roy, SS and McLaughlin, JAD (2010) Carbon nanotubes based microfluidic system for microparticle separation and sensing applications. In: International Conference on Nano Science and Technology (ICONSAT), Mumbai, India 2010
- [19] **Mathur, A**, Roy, SS and McLaughlin, JAD "SEM, TEM and AFM studies of multiwall CNTs grown by thermal and microwave plasma enhanced CVD methods" In: **NIBES-MSI annual symposium,** Belfast 2010 (**Won best talk award**)
- [20] O'Hare, P, Ganguly, A, Burke, GA, Rea, C, **Mathur A,** and Papakonstantinou, P, "The in- vitro response of human mesenchymal stem cells cultured on carbon nanotubes and graphene nanoflakes" In: **NIBES-MSI annual symposium,** Belfast 2010

Patents:

S. No.	Month & Year	Title	Application number	Status Indian/ International
1	2013	Portable low-cost nano-manufacturing system for the synthesis and conjugation of nanoparticles for biomedical applications. (UK patent, provisional)	PCT/EP2013/065937	International UK
2	2013	Label free diagnosis of allergy to drugs using a point of care (PoC) device based on micro fluidic platform. (Indian patent, provisional)		National Indian
3	2013	A novel hand held micro-electrode sensor for detecting fuel adulteration based on micro-fluidic platform (Indian patent, provisional)	2374/DEL/2013	National Indian
4	2014	A portable, low cost microfluidic system for clean synthesis of nanoparticles (Indian patent, provisional)	49/DEL/2014	National Indian
5	2014	A microfluidic based point-of-care cardiac marker (Troponin-I) detection system for early detection of acute myocardial infaraction (Indian patent, provisional)	2898/DEL/2014	National Indian
6	2014	A miniaturised sensor based on microfluidic platform for caffeine detection from food samples (Indian patent, provisional)	2961/DEL/2014	National Indian
7	2015	A novel hand-held Chemical free, Milk Adulteration test kit based on Micro fluidic sensor platform	2431/DEL/2015	National, Indian
8	2016	Naked-eye quantitative assay on paper device for date rape drug sensing via smart phone	201611025138	National, Indian
9	2016	An economical portable paper based chikungunya geno-sensor for resource constrained settings	20161009	National, Indian

Research grants: Completed

S.	Year	Title	Agen	Peri	Status	Value	Outcomes
No.			сy	od (in yrs)			
1	2014	Enhancing the sensitivity of point-of-care cardiac marker detection using interdigitated impedimetric immunosensor arrays	INUP / IITB	1	Comple ted	(~100,0000 INR)	a) Electrodes available for further research work. b)Poster presentation at international conference in 2014. c)Paper submitted to an international journal
2	2012	High resolution magnetic characterisations of Carbon Nanomaterials (CNMs) for nanodevices/nano sensor applications.	NAP- 363	1	Comple ted	(~23000 Euros)	 a) Electrical and magnetic characterization of Carbon Nanomaterials was done. b) A comparative study shows the magnetization behavior is dependent of nanostructures
3	2011	Fabrication of carbon nanotube arrays in microfluidic channels/devices and their applications for blood analytes separation and detection.	NAP- 214	1	Comple ted	(~21000 Euros)	a) Micro-structures available for further research work. b)Poster presentation at international conference in 2012. c)Paper published in an international journal

Articles/ Chapters published in Books:

S.No	Month & Year	Title with page number	Book Title, editor & publisher	ISSN/ ISBN No.	Whether peer reviewed.	No. of Co- authors
1	2016	Microfluidics: A platform for futuristic sensors	Biosensors: An Introductory Textbook Pan Stanford publishing	ISBN-10: 9814745 944 ISBN-13: 978- 9814745 949.	Yes	2 Dr Ashish Mathur Dr Shikha Wadhwa

Editor of a Journal

S. No.	Month & Year	Refereed Journal with ISBN/ISSN numbers	Status
1	Dec 2014- Till	Journal of Nanoscience, NanoEngineering &	Editor
	date	Applications eISSN: 2231-1777; ISSN: 2321–5194; SJIF: 3.277	

Ongoing Technology Transfer / consultancy

S. No.	Month & Year	Title	Agency	Period	Grant/ Amount Mobilized (Rs
1101	1001				Lakhs)
1.	Apr	Technology transfer of		NA	INR
	2016	milk adulteration test	Instruments		30 Lacs + 2.5
		kit	pvt ltd,		% royalty
			Gujrat		3 3

Current research grants:

Project Title	Funding source	Amount	Period	Role of the PI	Core research area
Horizontally aligned carbon nanotube based field effect transistor (CNTFET) sensor for pathogen (salmonella) detection.	INUP, IITB	INR ~12 Lacs	1.5 yrs	Co-PI	Carbon nanomaterials, Bio- sensors (Granted, will start in July 2017)
Study of Metal-Organic Framework and Graphene Nanostructures for Monitoring of Organophosphate Pesticides in Food Chain Using Microfluidic sensors	National Fund for Basic, Strategic & Frontier Application Research in Agriculture, Indian Council of Agricultural Research, New Delhi India	INR 1.77 Crore	3 yrs	Co-PI	Sensors Microfluidics
Facilitating the Intelligent Management of Chronic Wounds in Diabetic Patients: Developing Accessible Wound Monitoring Technologies	DST- UKIERI Call for Research Proposals 2016	INR ~70 Lacs	2 yrs	PI- Indian side	Sensors (Granted, will start in 2017)
A microfluidic based	Young scientist	INR	3 yrs	PI	Sensors

point-of-care cardiac marker (Troponin I) detection system for early detection of acute myocardial infraction	Dept. of science and technology, New	27.12 lacs		Microfluidics

Invited talks in India:

S. No	Title of Lecture/ Academic Session	Title of Conference/ Seminar etc.	Date(s) & Year of the event	Organized by	Whether International/ National/State
1	Microfluidic sensor platform with Bluetooth communication to PDA for advance device diagnosis applications	National Conference on Nanodevices (NCND-2015)	18-19, April 2015	Hindustan college of Science and Engineering, Mathura, UP	National
2	Recent trends in nanosensors for healthcare applications	International Conference on Engg. Physics, Materials and Ultrasonics	3-4, June 2016	NorthCap University, Gurugram	International

Experience as Research Guidance (PhD Supervisor):

S.	PhD student /	Institution	Duration	Major Achievements
No.	JRF			
1.	Supervising	ASET (ECE)	3 Yrs	Working on digital
	PhD student		Jan-2016-Dec	microfluidic based sensors
			2019	for real-time environment monitoring
				First of its kind project
				atleast in India to best of
				my knowledge.
				PhD co-guide from
				University of Ulster, UK
2.	Supervising	AINT	3 Yrs	Work has already been
	JRF under		July 2016-June	started.
	DST/SERB		2019	

	funded			JRF will soon enroll as
	young			PhD student
	scientist			
	project			
3.	Supervising	AINT	3 Yrs	Work has already been
	JRF under		Apr 2017- Apr	started.
	ICAR		2019	
	funded			JRF will soon enroll as
	project			PhD student

Profile:

Dr Ashish Mathur has joined AINT in February 2013 as Assistant Professor. Prior to this Dr Mathur worked as a research associate at the nanotechnology and integrated bioengineering center (NIBEC), the University of Ulster, UK (2010-12).

He finished his schooling from Central school, Armapur, Kanpur, India in year 2000, and then he finished his Bachelor's in electronics in 2003 followed by Masters in electronics in 2005 both from Kanpur University. Then he joined Amity University for M.Tech in nanotechnology and passed out from there in 2007 with flying colours.

Dr Mathur got Vice chancellor's research scholarship (VCRS) from University of Ulster (UU) and joined NIBEC, UU in 2007 as a PhD student working on carbon based materials and microfluidic devices. He was actively involved in the control growth of carbon based nano materials and their characterization. He has published over 30 research articles in peer reviewed journals and presented his work in number of national and international conferences. He has also filed 9 patents out of which one has already been transferred to the industry and others are on the verge of technology transfer to the relevant industries. He also has supervised many undergraduate and post graduate students both in India and abroad. Currently he is supervising three PhD students at Amity. He finished his PhD in 2011, and

was awarded as **student of the year for 2011**. He was also selected as **a member of various comities in the university** such as research degree committee, research graduate school board, skills and training committee, during this time. He also has carried out a **range of consultancies** with industry such as Schrader, Heartsine and Intellisense.

Recognised on several occasions for his presentation skills, in 2009 he received an award for best poster presentation from the UK Society for Biomaterials (UKSB) and in 2010 he was presented the same award from the Northern Ireland Biomedical Engineering Society (NIBES) as well as an award for best oral presenter from the Institute of Materials (IOM) in 2011.

With his excellent research background Ashish has **developed good collaboration** with national and international centers of excellence in research including IIT Mumbai, Cambridge, Open university UK; and various universities in South Africa, Australia, France, Canada etc.

Outside of his studies and work for the University Ashish worked as the **regional secretary** for the Art of Living Foundation in Northern Ireland, UK and currently serving as volunteer in India. The organisations aims to develop a stress-free society and do a lot of work in activities relating to health, education, sustainable development, and conflict resolution and disaster relief. Ashish helps organize courses on yoga, breathing and meditation for stress-elimination and self-development and also provide education and trauma relief in regions of trauma and disaster operating in 155 countries around the world.