

UNIVERSITÀ DEGLI STUDI DI MILANO

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settore scientifico-disciplinare \_\_CHIM/04-CHIMICA INDUSTRIALE\_\_\_\_\_ ,

presso il Dipartimento di \_\_\_\_\_CHIMICA\_\_\_\_\_ ,

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**[SINGH MANDEEP]  
CURRICULUM VITAE**

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	SINGH
NOME	MANDEEP
DATA DI NASCITA	[ 23, 10, 2020 ]

**Current Position****Since June 2020- Present****Postdoctoral Researcher****Employer:** Università Degli Studi Di Brescia, Italy**Project:** BIOMASS HUB- ID 1165247**Partner Company:** AB Impianti Srl, Orzinuovi-Brescia**Project Title:** Study of cell and fuel with solid oxides (SOFC) integrating catalytic layers for the production of electricity**Research Interest**

Metal Oxide Nanowires, Gas Sensors, Solid Oxide Fuel Cell, Surface Functionalization, Thin Film Transistors, Biosensors, Nanomaterial's, Micro/Nano fabrication, Photovoltaic Devices, OTFT, Material Characterization, Organic/Inorganic Materials based Electronic Devices.

**Area of Expertise**

- Photolithography
- Evaporation-condensation Growth
- X-ray photoelectron spectroscopy
- Gas sensor
- UV-Visible Spectroscopy
- Electrochemical Impedance Spectroscopy
- Scanning Electron Microscopy
- Metal Oxide based TFT devices
- Growth of Nanowires
- Self-assembled monolayers (SAM)
- Biosensor
- Thin film technology
- Sol-Gel Method
- Surface Biofunctionalization

**Education****Doctor of Philosophy**, Chemistry of Innovative Materials, Department of Chemistry, University of Bari **2016****Master of Philosophy**, Physics, Department of Physics, Guru Nanak Dev University **2010****Master of Science**, Physics, Department of Physics, S.G.G.S Khalsa College Mahilpur **2008****Bachelor of Science**, D.A.V College Hoshiarpur **2006**

## Awards and Honors

- Awarded with Regione Puglia Fellowship at University of Bary, Italy for PhD degree.
- Awarded with Junior Research Fellowship under BRNS- DAE (Board of Research in Nuclear Science- Department of Atomic Energy, India) sponsored project at Guru Nanak Dev University, Amritsar, India.
- Qualified GATE (Graduate Aptitude Test in Engineering) examination in 2010.

## Research Experience

- **Postdoctoral Fellow**

**Department of Mechanical and Industrial Engineering**, University of Brescia, Italy, **Since 2020-Present**  
**Project:** BIOMASS HUB- ID 1165247

**Partner Company:** AB Impianti Srl, Orzinuovi-Brescia

**Project Title:** Study of cell and fuel with solid oxides (SOFC) integrating catalytic layers for the production of electricity.

- **Borsa di Ricerca**

**Department of Information and Engineering**, University of Brescia, Italy, **March 2020 to May 2020**

**Main Responsibilities:** Surface functionalization of Metal Oxide Nanowires with self-assembled monolayers for gas sensing Applications

- **Postdoctoral Fellow**

**Department of Information and Engineering**, University of Brescia, Italy, **March 2019 to February 2020**

**Main Responsibilities:** Surface functionalization of Metal Oxide Nanowires with self-assembled monolayers for Gas sensing Applications.

- **PhD Thesis**

**Department of Chemistry**, University of Bari, Italy, **2013-2016**

Doctoral Thesis conducted with Prof. Luisa Torsi (Co-Supervisors: Prof. Gerardo Palazzo and Dr. Cinzia Di Franco)

**Thesis Title:** Solution Processable ZnO Based Electrolyte Gated Thin Film Transistor for Prospective Biosensing Applications.

- **Junior Research Fellow**

**Department of Physics**, Guru Nanak Dev University, Amritsar, India, **2010-2013**

**Project:** Design and Development of efficient functionalized phthalocyanine derivatives for light emitting and gas sensing applications.

**Main Responsibilities:** Study of the charge transport properties of Boron Subphthalocyanine Chloride based thin film and devices.

- **Master Thesis**

**Department of Physics**, Guru Nanak Dev University, Amritsar, India, **2008-2010**

Master Thesis conducted with Dr. Amarjit Singh

**Thesis Title:** Structural and Optical Characterization of Spin Coated Titanium Dioxide Thin Films.

**Main Responsibility:** To study the effect of thickness on the structural and optical properties of TiO<sub>2</sub> thin film.

## Teaching Experience

- **Attività di Supporto Alla Didattica (Teaching Support Activities)**

**University of Brescia**

**Courses:** Fisica Sperimentale I (Mecc., Term.)- S.S.D. FIS/01 (40 ore)

**Course of:** Ingegneria Elettronica E Delle Telecomunicazioni)

- **Part-time Lecturer**

**Department of Food Science and technology, Guru Nanak Dev University, Amritsar, India, 2009-2010 (6 months)**

**Courses:** Fluid Mechanics and Modern Physics

**Experimental Labs Taken:** Fluid Mechanics and Modern Physics

- **Part-time Lecturer**

**Department of Physics, D.A.V College, Amritsar, India, 2010-2011 (4 months)**

**Courses:** Quantum Mechanics, Electronics, Electricity and Magnetism, Thermodynamics and Statistical Physics

**Experimental Labs Taken:** Solid-state Physics and Electronics

### **Other Work Experience**

#### **Ticketing Agent and Account Manager**

**Employer:** Centro Servizi Immigrati Brescia, Italy, **2017-2019 (26 months)**

**Responsibilities:** 1. Booking of air tickets 2. Management of agency account 3. Visa consultancy to America, Canada, Australia and England 4. Dealing with customers on phone about the latest offer on air tickets.

### **List of Publications**

1. **Mandeep Singh**, Navpreet Kaur, Giovanni Drera, Andrea Casotto, Luigi Sangaletti Ermenegildo, Elisabetta Comini” SAM Functionalized ZnO Nanowires For Selective Acetone Detection: Optimized Surface Specific Interaction Using APTMS and GLYMO Monolayers, (2020) Advance Functional Materials (<https://doi.org/10.1002/adfm.202003217>).
2. Navpreet Kaur, **Mandeep Singh**, Abderrahim Moumen , Giorgio Duina and Elisabetta Comini” 1D Titanium Dioxide: achievements in chemical sensing ”, (2020) MDPI Materials, Vol. 13, (2020), pp. 2974.
3. Navpreet Kaur, **Mandeep Singh**, Elisabetta Comini” 1-D Nanostructured Oxides Chemoresistive Sensors”, Langmuir, Vol. 36, (2020), pp. 6326-6344.
4. **Mandeep Singh**, Navpreet Kaur and Elisabetta Comini,” Role of Self Assembled Monolayer in Electronic Devices”, Journal of Material Chemistry C, Vol. 8, (2020), pp. 3938-3955.
5. K. Manoli, P.Seshadhri, **Mandeep Singh**, C. Di Franco, Gerardo Palazzo and L. Torsi,” Solvent-gated Thin-Film-Transistors”, Physical Chemistry Chemical Physics, Vol. 19, (2017), pp. 20573-20581.
6. **Mandeep Singh**, K. Manoli, A. Tiwari and L. Torsi,”Double layer capacitance of ionic liquids for electrolyte gating of ZnO thin film transistor and effect of gate electrode”, Journal of Material Chemistry C, Vol. 5, 2017, pp.3509-3518.
7. **Mandeep Singh**, M.Y. Mulla, Maria Vittoria, M. Magliulo Gerardo Palazzo and Luisa Torsi,” Effect of the gate metal work function on water-gated ZnO thin film transistors performance”, Journal of Physics D: Applied Physics, Vol. 49, (2016),pp. 275101.
8. M. Magliulo, M.Y. Mulla, **Mandeep Singh**, E. Macchia, A. Tiwari, L. Torsi and K. Manoli,” Printable and flexible electronics: from TFTs to bioelectronic devices”,Review Article, Journal of Material Chemistry C,, Vol. 3, (2015),pp. 12347-12363.
9. Kyriaki Manoli, Maria Magliulo, Mohammad Yusuf Mulla, **Mandeep Singh**, Luigia Sabbatini, Gerardo Palazzo and Luisa Torsi,”Printable Bioelectronics To Investigate

Functional Biological Interfaces”, *Angewandte Chemie International Edition*, Vol. 54, (2015), pp. 12562–12576.

10. **Mandeep Singh**, M.Y. Mulla, L. Torsi et al., “Bio-functionalization of ZnO water gated thin-film transistor”, 6th IWASI 2015 IEEE proceeding.
11. **Mandeep Singh**, Aman Mahajan, Neeru Gupta, R.K. Bedi , “ Study of junction charge transport properties of Boron Subphthalocyanine Chloride Thin Film”, *Electronic Materials Letter*, Vol. 11, (2015), pp. 118-126.
12. **Mandeep Singh**, Gerardo Palazzo, Giuseppe Romanazi, L. Torsi et al., “Bio-sorbable, liquid electrolyte gated thin-film transistor based on a solution-processed ZnO layer”, *Faraday Discussions*, Vol. 174, 2014, pp. 383-398.
13. Navpreet Kaur, **Mandeep Singh**, Dinesh Pathak, Tomas Wagner and J. M. Nunji, “Organic Materials for photovoltaic applications: Review and Mechanism”, *Synthetic Metal*, Vol. 190, (2014), pp. 20-26.
14. **Mandeep Singh**, Aman Mahajan, R.K. Bedi , D. K. Aswal, “Dielectric spectroscopic study of Boron Subphthalocyanine Chloride Thin Film”, *Electronic Materials Letter*, Vol. 9, (2013), pp. 101-106.
15. **Mandeep Singh**, Dinesh Pathak, Aman Mahajan and R. K. Bedi , “Sol Gel Spin Coated TiO<sub>2</sub> Films for Transparent Window Applications”, *Journal of Optoelectronic and Advanced Material (JOAM)*, Vol. 14, (2012), pp. 624 – 629.
16. Aman Mahajan, Anshul Kumar, **Mandeep Singh**, Dinesh Pathak, R. K. Bedi "Structural, Optical and Electrical characterization of water soluble Copper phthalocyanine based films" *Optoelectronic and Advanced Material - Rapid communications (OAM-RC)*, Vol. 6, (2012), pp. 755 - 760.
17. Aman Mahajan, Anshul Kumar, **Mandeep Singh**, Dinesh Pathak and R. K. Bedi, “Characterization of drop casted CuTsPc films on ITO substrates” *International Journal of Nanoscience*, Vol. 12, (2013), pp.1350001.
18. Aman Mahajan, **Mandeep Singh**, Himani Gupta, R.K. Bedi, S. Kumar and D. K. Aswal “Characterization of Alkali halides Doped 1-(2-methoxy benzyloxy)-8- hydroxy-9,10-anthraquinone Films For Photovoltaic Applications”, *AIP proceedings*, (2011).

### **Book Chapter**

1. *Green Materials for Electronics*, Wiley-VCH; (2017); ISBN: 978-3-527-33865-8; Chapter: Biocompatible Devices and Sustainable Processes for Green Electronics: Biocompatible Organic Electronic Devices for Sensing Applications; Kyriaki Manoli, Mohammad Yusuf Mulla, Preethi Seshadri, Amber Tiwari, **Mandeep Singh**, Maria Magliulo, Gerardo Palazzo and Luisa Torsi.

### **Additional Skill**

- **Computer skill:** Microsoft office Package; Origin lab; Fortran; C programming.
- **Knowledge of Languages:** Mother Tongue: Punjabi; English: IELTS BAND: 6; Italian: Basic level

### **Personal Networking Sites**

- **LinkedIn:** <https://www.linkedin.com/in/mandeep-singh-3474494b/>
- **Google Scholar:** <https://scholar.google.it/citations?user=7PUv9SkAAAAJ&hl=en>

### Posters/Oral Presentations

1. Poster presentation: “*Water stable electrolyte gated ZnO thin film transistors*” MRS 2015 Fall Meeting, C Boston, Massachusetts.
2. Oral presentation: “*Electrolyte gated ZnO TFT for biosensing applications*” XXV Congresso Nazionale della Società Chimica Italiana - SCI 2014.
3. Poster presentation: “*Electrolyte gated ZnO Thin film transistor*” EMRS 2014 spring meeting, Lille, France.
4. Poster presentation: “*Structural, optical and electrical characterization of copper phthalocyanine and crystal violet films for photovoltaic application*” National Conference (UGC sponsored) on material Science and Technology: Emerging Trends (NCMST-10) held at D.A.V. College, Jalandhar (23, October, 2010).
5. Poster presentation: “*Characterization of Alkali halides Doped 1-(2-methoxy benzyloxy)-8- hydroxy-9,10-anthraquinone Films For Photovoltaic Applications*” Indian Vacuum Society Symposium (TFST-2011) held at Bhabha Atomic Research Centre (AARC), Mumbai, on (November 09-12, 2011).

Data

10/09/2020

Luogo

Brescia