

# Curriculum Vitae



## Dr. Iftikhar Ahmed Channa

Ph.D (Renewable Energy/Organic Photovoltaic), Germany

M.Engg. (Materials Engineering), Pakistan

B.Engg. (Metallurgy & Materials Engineering), Pakistan

+92 3343416478

iftikharc@neduet.edu.pk

iftikharchanna@yahoo.com



## PERSONAL INFORMATION

### Iftikhar Ahmed Channa

Department of Metallurgical Engineering, NED University, Karachi

+92 – 21-99261261-2526

[iftikharc@neduet.edu.pk](mailto:iftikharc@neduet.edu.pk), [iftikharchanna@yahoo.com](mailto:iftikharchanna@yahoo.com)

Sex Male | Date of birth July, 1986 | Marital status Married (2 children)

## EDUCATION AND TRAINING

Oct 2014 – Dec 2019



### Ph.D (Renewable Energy/ Organic Photovoltaic)

IMEET, FAU Erlangen-Nuremberg (Germany)

**PhD Thesis:** “Development of solution processable barriers for encapsulating thin film organic electronics”

**Majors:** Coatable thin films, oxygen and moisture barriers, weather resisting coatings, thin film organic electronics, Organic solar cell lifetime extension by suitable encapsulation.



Jun 2008–Mar 2011



### M.E. (Materials Engineering) (3.62/4.0 CGPA)

NED University of Engineering and Technology, Karachi (Pakistan)

**Research Topic:** “Synthesis and Characterization of Clay-grafted-Acryl amide-Acrylic acid Superabsorbent Composite”

**Majors:** Superabsorbent materials, Material characterizations Techniques, Phase transformations in metals & Alloys, Production of Ferrous & Non-ferrous, XRD, Composite Materials, Heat treatment & Microstructure Evolution.

Jan 2004–Mar 2008



### B.E. (Metallurgy & Materials Engineering) (3.02/4.0 CGPA)

Mehran University of Engineering & Technology, Jamshoro (Pakistan)

**Thesis Topic:** "Improvement of the weld quality of AISI 1020 steel"

**Majors:** Weld quality, weld characterization and testing in terms heat affected zone, Heat treatment & microstructure evaluation, pre and post annealing on weld materials.

## WORK EXPERIENCE

Oct 2014–Jan 2019



### Guest scientist

#### ZAE Bayern, Erlangen (Germany)

**Research Topic:** "Development of coatable barrier for packaging thin film organic electronics"

- To develop system to measure barrier quality
- To sort out various barrier materials
- To characterize various materials on the basis of tortuosity and coefficient of Diffusion
- To test the effect of developed barriers on lifetime of OPV under Sun and various damp heat conditions.
- Direct coating of developed barriers on OPV and its impact on OPV lifetime

Feb 2019–Dec 2019



### Researcher

#### Institute Materials for Electronic and Energy Technology (i-MMET)

**Research Topic:** "Direct deposition of solution processable barrier for encapsulation of organic solar cells"

- To develop solution processable barriers
- To enable R2R processing of barriers on top of organic solar cells (OSCs)
- To develop flexible and bendable barriers in the range of  $10^{-2}$  g/m<sup>2</sup>.day
- OSCs stability of over 300 h in accelerated conditions

May 2016–till date



### Assistant Professor

#### Materials & Metallurgical Engineering Department

**NED University of Engineering and Technology, Karachi (Pakistan)**

#### Teaching & Research

- Lab In-charge Thin Film Lab
- To teach various courses at undergraduate level.
- To develop new laboratories in the department.
- Procurement of equipment for Metallurgical Engineering Department's Laboratories.
- To conduct practical(s).
- To supervise Master thesis and final year projects for undergraduate students.

Mar 2009–Apr 2016



### Lecturer

#### Materials & Metallurgical Engineering Department

**NED University of Engineering and Technology, Karachi (Pakistan)**

#### Teaching & Research

- Faculty advisor Metallurgical Engineers Society (MES)
- Lab In charge Metallography.
- Area coordinator / ISO coordinator for the department
- Teaching various subjects.

## INTERNSHIP TRAININGS

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May 2007–Jun 2007

### **Fateh Motors Ltd., Hyderabad, (Pakistan)**

Motor bike manufacturing, assembly of parts, inspection and testing

Dec 2006–Dec 2006

### **Precision Engineering Complex (PEC), PIA, Karachi (Pakistan)**

Investment casting, Destructive & Non destructive testing, heat treatment

Jun 2006–July 2006

### **Karachi Shipyard and Engineering Works, Karachi (Pakistan)**

Melting and Casting, Ship building, Quality Control Department

Dec 2005–Dec 2005

### **Atlas Cables Kotri (Pakistan)**

Melting and drawing operation, Inspection and testing

## TRAINING COURSES

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Apr 2013–Apr 2013

### **ISO 9000 Quality management system**

Dec 2013–Dec 2013

### **Thin film coating (NINVAST Islamabad, Pakistan)**

Vacuum techniques, PVD, CVD, sputtering etc.

Feb 2014–Feb 2014

### **Health safety and environment management system (NED University)**

## TECHNICAL & ORGANIZATIONAL SKILLS

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### **Technical**

- Synthesis and preparation of chemical and polymeric solutions
- Preparation of thin film coatings
- Hands on knowledge of common coating techniques
- gas barrier coatings
- Hands on knowledge of characterization and testing including barrier characteristics (OTR, WVTR measurements), OM, SEM, XRD, FTIR, Solar cell measurements, Bendability Tensile testing, hardness testing, fatigue testing etc.

### **Communication & Teaching:**

Good communication & teaching skills acquired through international research environment, working as sales & marketing engineer, education in English, through various online lectures mainly, MIT, Stanford, Yale, Michigan and Cambridge University etc.

### **Graduate Assessment**

I passed Graduate Assessment Test General (80 Percentile score) & Subject (80 Percentile score) taken by National Testing Service (NTS) Pakistan in 2011.

## PERSONAL SKILLS

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### **Mother tongue(s)**

Sindhi, Urdu,

### **Other language(s)**

English (Fluent), German (Basic: A1.1), Hindi, Punjabi & Siraiki

### **Interests**

Learning, teaching, exercising for fitness, reading books, watching (& sometimes playing) cricket

1. S. Ahmad and **I.A. Channa**, (2013) Mathematical Relationship between Ferritic, Pearlitic and Average Grain Size of Steel, *Journal of Modern Science and Technology*, Vol. 1. No. 1. May 2013, Pp.1-18
2. **I.A. Channa**, A Distler, M Zaiser, C.J. Brabec, H.-J Egelhaaf, Thin Film Encapsulation of Organic Solar Cells by Direct Deposition of Polysilazanes from Solution (Publisher John Wiley and Sons 2019, *Journal: Advanced Energy Materials*) (Funding agency DAAD, JCR **impact Factor 29.46**) <https://doi.org/10.1002/aenm.201900598>
3. S.H. Abro, Ali Dad Chandio, **I.A. Channa**, AS Alaboodi, Design, Development and Characterization of Graphene Sand Nano-Composite for Water Filtration, Publisher, PCSIR 2020, *Journal PJSIR (X category)*
4. S.H. Abro, Ali Dad Chandio, **I.A. Channa**, AS. Alaboodi, Role of Automotive Industry in Global Warming, Publisher, PCSIR 2020, *Journal PJSIR (X category as per HEC, Pakistan)*
5. Mahmood Iqbal, **I.A.Channa**, M.Iqbal, M.S. Khan, S.M. Salman, S. Noor, M. Rizwan, A.A. Shah, A.D. Chandio, Preparation and characterization of co-polymer (acrylic acid and acrylamide) as super absorbent composites grafted with thar clay superabsorbent composite, *Sci.Int.(Lahore)*,32(4),451-458 2020 (**Y category as per HEC, Pakistan**)
6. S.H. Abro, Ali Dad Chandio, M.A Siddiqui, **I.A. Channa**, Aluminum and Aluminum Nitrides Effect on Nucleation Sites in Micro-alloyed Steel, *Pakistan Academy of Sciences. (X category as per HEC, Pakistan)*
7. **I.A. Channa**, Aqeel Ahmed Shah, Shahid Hussain Abro, Mohammad Ali, Effect of Tempering Temperature on the Properties of Martensitic stainless steel (AISI 420), Publisher, *IBA Sukkur 2020*
8. A.K. Shah, G. Maitlo, AA Shah, **I.A. Channa**, G.A Kandhro, H.A Maitlo, One pot menthol synthesis via hydrogenations of citral and citronellal over montmorillonite-supported Pd/Ni-heteropoly acid bifunctional catalysts, Publisher 2019, *Journal: Reaction Kinetics, Mechanisms and Catalysis (JCR Impact Factor 1.5)* <https://doi.org/10.1007/s11144-019-01679-6>
9. A.D Chandio, A.A. Shah, **I.A. Channa**, Waqas Salman, Variation in Mechanical Properties of SAE 1006 Interstitial Free (IF) Steel Sheets During Cold Rolling, *NUST Journal of Engineering Sciences, Vol. 13, No. 2, 2020*
10. A.A. Shah, M.A. Bhatti, A. Tahira, A.D. Chandio, **I.A. Channa**, A.G. Sehto, S. Ebrahim, Z.H. Ibupoto, Facile synthesis of copper doped ZnO nanorods for the efficient photodegradation of methylene blue and methyl orange, *Ceramic International, 2019 (JCR Impact factor 4.5)*
11. **I.A. Channa**, A.D. Chandio, M. Rizwan, A.A. Shah, M.A. Shar, Solution coated PVB/mica flake coatings for the encapsulation of organic solar cells, *Materials MDPI*, Published Manuscript) (Published May 12, 2021) (**JCR Impact factor 3.76**)
12. **I.A.Channa**, A. Distler, B. Scharfe, S. Feroze, K. Forberich, B. Lipovšek, Christoph J. Brabec and H.-J. Egelhaaf, Solution processed oxygen and moisture barrier based on glass flakes for encapsulation of Organic (Opto-) Electronic Devices, *Journal of Printed and flexible Electronics*, (Published June 11, 2021) (**JCR Impact factor 3.52**) <https://doi.org/10.1088/2058-8585/ac0716>
13. **I.A. Channa**, A.D. Chandio, M. Rizwan, M. A. Makhdoom, S.A. Abro, A. A. Shah, J. Bhatti, Polyvinyl Alcohol and Nano-clay based Solution Processed Packaging Films, *Coatings* (Published on August 6, 2021 in *Coatings*, **Impact factor 3.12**) <https://doi.org/10.3390/coatings11080942>

14. M.A. Makhdoom, V. Sgobba, **I.A. Channa**, producing oxide free silicon nanocrystals, a novel & benign approach, Published on August 22, 2021, in *Optik*, **Impact factor 2.97**  
<https://doi.org/10.1016/j.ijleo.2021.167789>
15. **I.A. Channa**, M. Rizwan, A.D. Chandio, M.A. Makhdoom, A.Shah, M. A. Shar, A. Mahmood, Optimizing the Process Parameters of Solution Based Silica Coatings as ultra-high gas barrier thin films. *Materials* (Accepted on Oct 27, 2021) (**impact factor 3.76**)  
<https://doi.org/10.3390/ma14227000>
16. J. Ashfaq, **I.A.Channa**, A. A. Shaikh, A.D. Chandio, A. A. Shah, Bushra Bughio, Ashfaq Birhmani, Sultan Alshehri, M. Ghoneim “Gelatin-and Papaya-Based Biodegradable and Edible Packaging Films to Counter Plastic Waste, *Materials* (Accepted January 25, 2022) (**Materials MDPI Impact factor 3.76**) <https://doi.org/10.3390/ma15031046>
17. Sumra Yousuf, Payam Shafiqh, **I.A.Channa**, M. Rizwan, Tanveer Ahmed Khan, Belal Alsubari, Mustabshira Gul, Chemical and Thermal Characterization of Cement Mortar Containing Ground Palm Oil Fuel Ash as a Partial Cement Replacement. *Journal of Wuhan University of Technology-Materials Science*. (**accepted manuscript, Impact factor: 0.95**)
18. A.D. Chandio, A.A. Shaikh, **I.A. Channa**, M. Shahzad, J. Bhatti, S. Bhutto, Synthesis of graphene oxide by modified Hummers method and with improved oxidation through ozone treatment, *Journal of Chemical Society of Pakistan* (**Accepted manuscript**) (**Journal of Chemical Society of Pakistan, HEJ Karachi University**)
19. **I.A. Channa**, J. Ashfaq, S.J. Jilani, A.D Chandio, A.A. Shah, M.N.b. Jumma, UV Blocking and oxygen barrier coatings based on Polyvinyl alcohol and zinc oxide nanoparticles, *Coatings* (**Published June 25<sup>th</sup>, 2022, Coatings, Impact factor 3.12**)  
<https://doi.org/10.3390/coatings12070897>
20. **I.A. Channa**, J. Ashfaq, S.J. Jilani, Sumra Y. A. Makhddom, A.D Chandio, M.N.b. Jumma, Sustainable and Eco-friendly packaging films based on polyvinyl alcohol and glass flakes, *Membranes* (**Published online July 9<sup>th</sup>, 2022, Membranes, impact factor 4.6**)  
<https://doi.org/10.3390/membranes12070701>
21. F.Ahmed, M. Zain-abdein \*, **I. A. Channa**, M. K. Yaseen, S. J. Gilani, M. A. Makhdoom, M.Mansoor, U. Shahzad, M.N.B. Jumah, Effect of ultrasonic surface mechanical attrition treatment induced nanograins on the mechanical properties and biocompatibility of pure titanium (**Published July 2022, Materials MDPI, impact factor 3.76**)  
<https://doi.org/10.3390/ma15155097>
22. S. A. Batool, U. Liaquat, **I.A. Channa**, S. J. Gilani, M.A. Makhdoom\*, M.Yasir, J. Ashfaq, M.N.B. Jumah, M. A.Rehman\*, Development and Characterization of Zein/Ag-Sr Doped MBGNs Coatings for Biomedical Applications (**Published manuscript, August 4, 2022 in Bioengineering MDPI, impact factor 4.7**)  
<https://doi.org/10.3390/bioengineering9080367>
23. M.A. Bhatti, S.J. Gilani, A.A. Shah, **I.A.Channa**, K.F. Almani, A.D. Chandio, M.N.B. Jumah, Z.H Ibhupoto, Effective removal of methylene blue by surface alteration of TiO<sub>2</sub> with Ficus carica leaf extract under visible light (**Published manuscript August 12, 2022, Nanomaterials MDPI, impact factor 5.7**) <https://doi.org/10.3390/nano12162766>
24. N.Bashir, H.M. Saad, M. Rizwan, S. Bengol, **I.A.Channa**, Effect of cobalt nanoparticles on mechanical properties of Sn-58Bi Solder joint, (Accepted in *Journal of Material science: Materials in Electronics*, **impact factor 2.4**) <https://doi.org/10.1007/s10854-022-09035-6>
25. M.A. Bhatti, K. Almani, A. Tahira, A. Shah, **I.A. Channa**, Umair. A, Zafar Ibupoto, Renewable and eco-friendly ZnO immobilized onto Dead

Sea Sponge floating materials with dual practical aspects for robotic photocatalysis and disinfection applications (TA-ART-09-2021-007792) (Accepted on Oct 3<sup>rd</sup>, 2022 in *Nanotechnology IOP science*, **Impact factor 3.8**)

#### Book Chapter (International Publisher)

26. **I.A. Channa**, A Distler, C.J Brabec, H.-J Egelhaaf, Solution-coated barriers for organic electronics Chapter in *Organic Flexible Electronics: Fundamentals, Devices, and Applications*, 249 (Publisher Woodhead Publisher, Elsevier, 2020) Book Chapter

#### Conference Paper

27. M. Rizwan, **I.A. Channa**, M. A. Siddiqui, M. Younus, Effect of Tempering Temperature on Susceptibility of Inter-granular Corrosion of Austenitic Stainless Steel (AISI 304), *International Mechanical Engineering Congress, 2015 (Conference paper)*

#### Submitted manuscripts

28. F. Masood, M. A. Makhdoom, **I.A. Channa**, S. J. Gilani, A. Khan, R. Hussain, S. A. Batool, K. Konain, Development and Characterization of Garlic Loaded Chitosan and Chondroitin Sulfate Based Hydrogels for potential Wound Healing/Skin Regeneration Applications (Submitted in *Journal 'Gels'* **impact factor 4.4**)

29. A.D. Chandio, A.H. Pato, **I.A. Channa**, S.J. Gilani, A.A. Shah, J. Ashfaq, M.N.b Jummah, Exploring the Heterocatalytic proficiencies of ZnO Nanostructures in the simultaneous photo-degradation of Chlorophenols (Submitted in *RSC Advances*, **Impact factor 3.9**)

30. M.A. Makhdoon, F. Ahmed, **I.A. Channa**, I.Aqil, S. Hussain, Effect of Multi-passes on Microstructure and Fracture Mechanics of AISI 1045 Weldments (Submitted in *ACS Omega*, **impact factor 2.9**)

31. S. Asrar, M. Tufail, A. Azmat, **I.A. Channa**, J. Ashfaq, S. Feroze, A.D. Chandio, M.A. Shar, Al, Hazaa, Comparative study of Titanium based alloys via nano-indentation technique. (Submitted on Oct 3<sup>rd</sup>, 2022 in *Crystals MDPI*, **Impact factor 2.8**)

32. A. Azmat, M. Tufail, S. Asrar, **I.A. Channa**, J. Ashfaq, A.D Chandio, S.J. Gilani, M.N.b Jumah, Characterization of orthopedic implant materials and their comparative analysis based on their performance; (Submitted on 26 Sept 2022, in *Journal of Engineering, science and Technology, Elsevier*. **Impact factor 2.4**)

33. S.N.S Bukhari, A.A. Shah, M.A. Bhatti, A. Tahira, **I.A. Channa**, A. K. Shah, A.D Chandio, W. Mahdi, S. Alshehri; Psyllium husk assisted synthesis of ZnO nanostructures with improved photocatalytic properties for the degradation of methylene blue (MB) (Submitted in *Nanomaterials MDPI*, **Impact factor 5.7**)

#### Master Thesis supervised

1. Coating Barriers on organic electronics (Mini Project at FAU Erlangen, Germany) (Completed)
2. Synthesis and Characterization of Graphene oxide-based nanocomposites for packaging applications (Completed)
3. Development and characterization of PVB/boron nitride films for gas barrier applications (Completed)
4. Development of Edible and Biodegradable packaging films (Completed)
5. Development of PVB/glass flake-based films for the packaging of

- opto-electronics (Completed)
- 6. Strengthening of PVB films by incorporation of egg shell powder (Completed)
- 7. Development and characterization of sensors for rapid expiry date analysis (in progress)
- 8. Development of Self-healing/ self-repairing thin film coatings for various applications (In Progress)

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## Achievements & Grants

- **Fully Funded** DAAD scholarship for Ph.D (2014)
- Completed Ph.D with “**Summa Cum Laude**” grade (An outstanding achievement award in Germany) (2019)
- Secured **HEC NRPU funding** as Co-Principal investigator (Development of biomedical implants and coatings) (2021)
- Secured **NEDAASC funding** for undergrads final year project (Development of Edible and biodegradable packaging films) (2021)
- Secured **NED seed funding** (Development of functional thin films for optoelectronic applications) (2021)
- Secured **NEDAASC funding** for undergrads final year project (Development of self-healing and superhydrophobic coatings) (2022)

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## Memberships

- Life member Pakistan Engineering council
- Life member Pakistan Vacuum Society
- Member International Association of Engineers (IEANG)
- Full time member of The Institution of Engineers Pakistan

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## Countries visited

Austria, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Luxembourg, Malta, Norway, Poland, Switzerland, Spain, Slovakia, Slovenia, the Netherlands & Turkey

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## Reference:

### 1- Research project and Ph.D thesis supervisor

**Prof. Dr. Christoph J. Brabec**

Department of Material science and Engineering

Chair of Materials for Electronic and Energy Technology (iMEET)

FAU Erlangen-Nuremberg, Martenstr. 7 90158, Erlangen, Germany

Tel. +49 9131 85-25426, Fax: +49 9131 85-28495

Email: [Christoph.brabec@fau.de](mailto:Christoph.brabec@fau.de)

### 2- Research Supervisor at ZAE Bayern

**Dr. Hans Joachim Egelhaaf**

Head Solar Factory of the Future

Furtherstr. 250, Bau 16, OG I, 90429 Nuremberg, Germany

Tel. +49 911 568549350 Fax: +49 0911 56854-9351

Email: [Hans-Joachim.Egelhaaf@fau.de](mailto:Hans-Joachim.Egelhaaf@fau.de)