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National Institute of Technology Karnataka  
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<https://mme.nitk.ac.in/professor/saumen-mandal>

Others: <https://scholar.google.com/citations?user=RKHXEIEAAAAJ&hl=en>

## FIELD OF INTEREST

Thin film & Coating; Solution combustion; Printing; Gas sensors; Dielectrics; Optoelectronics. Oxide and non-oxide advanced ceramics. High entropy oxides. Marine bio ceramics. Antibiofouling coatings. UV protective coatings.

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## EMPLOYMENT

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**National Institute of Technology Karnataka  
Metallurgical and Materials Engineering**  
Associate Professor

Surathkal, India  
Oct, 2023 – Till now

**National Institute of Technology Karnataka  
Metallurgical and Materials Engineering**  
Assistant Professor Grade I

Surathkal, India  
May, 2018 – Till now

**National Institute of Technology Karnataka  
Metallurgical and Materials Engineering**  
Assistant Professor Grade II

Surathkal, India  
April, 2015 – May, 2018

**Dongguk University**  
Post Doctoral Research fellow  
Project: Organic TFTs based printed circuits

Seoul, South Korea  
Oct, 2014 – April, 2015

**Fondazione Istituto Italiano di Tecnologia,  
Center for Nano Science and Technology**  
Post Doctoral Research fellow

Milan, Italy  
May, 2013 – Sept, 2014

Project: All organic, all inkjet printed complementary circuit on a flexible substrate.

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## EDUCATION

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**Indian Institute of Technology, Kanpur**  
Ph.D. Materials Science and Engineering

India  
2006-2013

Thesis: Materials and processes for printed flexible organic thin film transistors

**Indian Institute of Technology (B H U), Varanasi**  
M. Tech. Ceramic Engineering

India  
2004-2006

**University of Calcutta, Kolkata**  
B. Tech. Ceramic Technology

India  
1999-2003

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## ACHIEVEMENTS & AWARDS

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- Editor-in-chief recommended the article titled “A review on high entropy silicides and silicates: Fundamental aspects, synthesis, properties” as “**Editor’s Choice**” and as “**TOP CITED ARTICLE**” (among work published between January 1, 2023 and December 31, 2023) in International Journal of Ceramic Technology (IJACT).
- “**Best paper by Young Researcher Award - 2024**” to Mr. Lakkimsetti Lakshmi Praveen working under the guidance of **Dr. Saumen Mandal**, during the International Conference on Advanced Ceramics for Sustainability (Cera4s 2024) (November 28 – 30, 2024), organized by IIT Madras.

- Winner of **“NanoArtography Competition 2023: The Art of Capturing Beauty at the Nanoscale”** to Mr. Lakkimsetti Lakshmi Praveen, working under the guidance of **Dr. Saumen Mandal**, organized by Purdue University, USA on 30<sup>th</sup> September 2023
- **“Metallography Contest Award”** to Mr. Mahin Saif Nowl, working under the guidance of Dr. Saikat Dutta and **Dr. Saumen Mandal**, in the International Conference on Advances in Minerals, Metals, Materials, Manufacturing and Modelling (ICAM5-2023) (September 22 – 23, 2023), organized by NIT Warangal.
- **Best paper award** in "International Conference on Women in Electrochemistry (ICWEC 2023), Electrochemical Society of India, April 7 – 8, 2023, IISc Bengaluru, India.
- **Best paper award** in “National Symposium on Electrochemical Science and Technology (NSEST 2021)”, June 24 – 25, 2022, IISc Bengaluru, India.
- **Awarded** by **MANOHAR PARRIKAR PRASHASTI** for propelling the frontier of GLOBALPOWERINDIA 2021 from Rethink India on 09<sup>th</sup> September 2021.
- **Certificate of Achievement** for excellent performance in Outreach Program 2018-19 from “The Ceramic and Glass Industry Foundation, The American Ceramic Society”.
- **Best poster award** in (a) “National Conference on Processing of Materials (NCOPOM18)”, September 19-21, 2018, NITK Surathkal, India and (b) “International Conference on Surface Engineering”, August 9 – 11, 2018, IISc Bengaluru, India.
- **Best poster award** in (a) “International Conference on Nanotechnology (ICNano-2016)”, April, 21-23, 2016, Bangalore, India and (b) “International Conference Smart Materials and Technologies for Emerging Electronics (IC-SMTEE-2016)”, February 19 and 20, 2016, Mangalore, India.
- **Prestigious “Gandhian Young Technological Award, 2014”**- from Society for Research and Initiatives for Sustainable Technologies and Institutions, **Govt of India**.
- **“Invention Award”** of **USD 10000** from Intellectual Venture Asia for **US Patent** on 16<sup>th</sup> May, 2013.
- **“Invention Award”** of **USD 1000** from Intellectual Venture Asia on 20<sup>th</sup> April, 2012.
- **Best poster award** in (a) “International Conference on Nano Science and Technology” (ICONSAT 2010), February 17-20, 2010 and (b) “XV<sup>th</sup> International Workshop on the Physics of Semiconductor Devices”, December 15-19, 2009.
- **Gold medalist in Master of Technology, IIT-Banaras Hindu University, 2006 for being University topper.**

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## SPONSORED RESEARCH PROJECTS

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(1) Project Title: Prawn shell-derived natural protein-based highly efficient UV protection coating for drug products. (CRG/2021/001084)

PI: **Dr Saumen Mandal**; Co-PIs: Dr Saikat Dutta

Funding Agency: “Core Research Grant” from SCIENCE & ENGINEERING RESEARCH BOARD (SERB), Amount: 35.2 Lakhs (February, 2022 – February, 2025)

(2) Project Title: Academia-industry outreach program on conventional and advanced ceramic manufacturing for the next generation of ceramics and glass engineers.

PI: Prof. Bikramjit Basu; Co-PIs: Prof. B. V. Manoj Kumar, Dr. Uttam K. Ghorai, **Dr. Saumen Mandal**, Mr. Sabyasachi Roy, Dr. Debdutt Patro, Mr. N. M. Dube

Funding Agency: “The Ceramic and Glass Industry Foundation, The American Ceramic Society”, Amount: 11000USD (November, 2018 – November, 2019)

(3) Project Title: All solution processed transparent low temperature synthesized Indium Zinc Tin Oxide based high performances thin film transistors for active-matrix displays. (ECR/2015/000339)

PI: **Dr Saumen Mandal**

Funding Agency: "Early Career Research Award" from SCIENCE & ENGINEERING RESEARCH BOARD (SERB), Amount: 21 Lakhs (December, 2016 – December, 2019)

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## INVENTION-PATENT

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- (1) Lakkimsetti Lakshmi Praveen, Bhumika Upadhyay, **Saumen Mandal**, "Fabrication of low temperature phase-stabilized high-entropy spinel oxide for gas sensing application", **Indian Patent 581707**, 25 February 2026. (**Granted**)
- (2) Lakkimsetti Lakshmi Praveen, Harsha Satija, Shagun Kumar, **Saumen Mandal**, "A method of formulating colloidal boron quantum dots dispersion in glycerol for gas-sensing application", "**Indian Patent**", Application Number 202541004383 dated 20/01/2025. (Filed)
- (3) Lakkimsetti Lakshmi Praveen, Juvva Srinithya, Soorya G, **Saumen Mandal**, "A method of preparing low temperature processed Ni-Ti-TiC eutectic cermet", **Indian Patent 580925**, 18 February 2026. (**Granted**)
- (4) Mahin Saif Nowl, Ambili V, Santhra Krishnan P, Harshitha N Anchan, Saikat Dutta, **Saumen Mandal**, "A process of preparing an ultraviolet (UV) protective coating from marine food bio-waste materials", **Indian Patent 566530**, 22 May 2025. (**Granted**)
- (5) Ashritha Salian, **Saumen Mandal**, "A method of preparing low temperature stabilized high entropy high-k oxides", "**Indian Patent**", Application Number 202141035822 dated 09/08/2021. (Filed)
- (6) **Saumen Mandal**, Dipti Gupta, Komalakrushna Hadagalli, Pavan Pujar, Shakya Kaushal Rajendraprasad, "Method and system for fabricating a porous ceramic structure using combustible pore former", **Indian Patent 436150**, 26 June 2023. (**Granted**)
- (7) **Saumen Mandal**, Bikesh Gupta, Pavan Pujar, Komala Krishna Hadagalli, Robbi Vivek Vardhan, "Fabrication of high conductive metallic films at low temperature", **Indian Patent 347677**, 24 September 2020. (**Granted**)
- (8) **S Mandal**, M Katiyar, "Organic thin film transistors and methods for their manufacturing and use", **US Patent 9680097 B2**, June 13, 2017. (**Granted**)
- (9) **Saumen Mandal**, Rahul Sharma and Monica Katiyar, "A hybrid ink formulation and a method for preparing the same", **Indian patent 317139**, Application Number 1161/DEL/2012 dated 16<sup>th</sup> April, 2012. (**Granted**)

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## PUBLICATION: JOURNAL PAPER

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- (1) Mahin Saif Nowl, Eashwaren Vishnu Namboothiri, Yadanala Pranay Kumar, Komalakrushna Hadagalli, Saikat Dutta, **Saumen Mandal**, "From Biowaste to UV Protection: Cellulose Acetate-Amino Acid Hybrid Coatings from Prawn Shells", **Cellulose**, January 2026 (Under review).
- (2) Lokeshwar Hembram, Eashwaren Vishnu Namboothiri, Lakkimsetti Lakshmi Praveen, Nanda Shakti, **Saumen Mandal**, "Cobalt-doped CuO Nanorods: An Efficient Sensing Material for Detecting Ammonia at Ambient Conditions", **Journal of Materials Science: Materials in Electronics**, March 2026 (Under revision).
- (3) Lakkimsetti Lakshmi Praveen, Bhumika Upadhyay, Ramesh Potnuri, **Saumen Mandal**, "Ultra-high ammonia gas response of Phase-stabilized  $(\text{Fe}_{0.2}\text{Ni}_{0.2}\text{Cr}_{0.2}\text{Mn}_{0.2}\text{Zn}_0)_3\text{O}_{4-\delta}$  High-entropy Spinel Oxide Sensor array and its Machine Learning Predictions", **Journal of Alloys and Compounds**, 1042 (2025) 183945.

- (4) Lakkimsetti Lakshmi Praveen, Sugandha Saxena, Ashritha Salian, Nirmal Ganguli, **Saumen Mandal**, "Role of micro-strain on the structural characteristics of oxygen-deficient  $\text{Co}_3\text{O}_4$  screen-printed gas-sensor: Corroborative insights using DFT and MD simulations", **Sensors and Actuators B: Chemical**, 447 (2026) 138744.
- (5) Hembram Lokeshwar, Lakkimsetti Lakshmi Praveen, **Saumen Mandal**, Nanda Shakti, "Deep-eutectic solvent-assisted green synthesis of MAX-phase  $\text{Cr}_2\text{AlC}$  and its 2D-MXene derivative  $\text{Cr}_2\text{CT}_x$  towards room-temperature detection of ammonia gas", **Ceramics International**, (2025).
- (6) Prajwal Naik C, Mahin Saif Nowl, **Saumen Mandal**, Saikat Dutta, "Comprehensive utilization of crustacean wastes by chemical-catalytic transformations using levulinic acid as a sustainable platform chemical", **Biomass Conversion and Biorefinery**, 15 (2025) 25611–25622.
- (7) Mahin Saif Nowl, Ambili V, Vishal Gautam, Saikat Dutta, **Saumen Mandal**, "Soy Protein Isolate Films: A Biodegradable Solution for UV Protection Alternatives", **Journal of Food Measurement and Characterization**, 19 (2025) 5689-5694.
- (8) Perabathula Satish, Komalakrushna Hadagalli, Mahin Saif Nowl, Rahul Siddeswara, Shankamma Kalikeri, **Saumen Mandal**, "Enhancing strength properties of hydroxyapatite composites with bentonite clay", **Transactions of the Indian Ceramic Society**, 84 (2025) 107–116.
- (9) Lakkimsetti Lakshmi Praveen, Nitesh Pratap Singh, Robbi Vivek Vardhan, **Saumen Mandal**, All-printed  $\text{WO}_3$  films on Ag-interdigitated electrode derived from aqueous screen-printable inks for room-temperature ammonia gas detection, **Flexible and Printed Electronics**, 10 (2025) 015008.
- (10) Mahin Saif Nowl, Ambili V, Lakkimsetti Lakshmi Praveen, Sandeep Singh, Ubair Abdus Samad Asiful Seikh, Saikat Dutta, **Saumen Mandal**, "A comparative UV absorption study of crustacean exoskeletons: structural, microstructural, and morphological analysis", **Materials Research Express**. 11(2024) 085405.
- (11) Robbi Vivek Vardhan, Lakkimsetti Lakshmi Praveen, Manjunath G, P Nagaraju, Asiful Seikh, Ibrahim A. Alnaser, Saumen Mandal, "Detection of ethanol gas at room temperature by  $\text{In}_2\text{O}_3$ -based screen-printed films fabricated through particle-free aqueous solution combustible inks", **Materials Research Express**, 11 (2024) 076403
- (12) Vishal Gautam, Lakkimsetti Lakshmi Praveen, Robbi Vivek Vardhan, **Saumen Mandal**, "Exploring the protection of spray-pyrolyzed tungsten oxide hydrophobic coating on stainless steel in a marine environment", **Bulletin of Materials Science**, 47 (2024) 204.
- (13) Lakkimsetti Lakshmi Praveen, Karakavalasa Kailasam, Robbi Vivek Vardhan, **Saumen Mandal**, "Bio-inspired, ultrahydrophobic natured durable thermal-sprayed ytterbium-oxide coatings: review and perspectives", **Transactions of Indian Ceramic Society**, 83 (2024) 149-165.
- (14) Perabathula Satish, Lakkimsetti Lakshmi Praveen, Komalakrushna Hadagalli, **Saumen Mandal**, "Effect of temperature on solid state reaction of prawn shell derived phase-pure  $\beta$ -tricalcium phosphate", **Journal of Materials Engineering and Performance**, 33 (2024) 5458-5470
- (15) Sameer Sunil Karle, Karakavalasa Kailsam, Robbi Vivek Vardhan, **Saumen Mandal**, "Anti-biofouling evaluation of vacuum-assisted hydrophobic ytterbium oxide ( $\text{Yb}_2\text{O}_3$ ) coating on stainless steel by facile spray combustion", **Bulletin of Materials Science**, 47, 98 (2024)
- (16) Perabathula Satish, Komalakrushna Hadagalli, Lakkimsetti Lakshmi Praveen, Mahin Saif Nowl, Asiful H Seikh, Ibrahim A Alnaser, Hany S Abdo, Saumen Mandal, "Hydroxyapatite–Clay

*Composite for Bone Tissue Engineering: Effective Utilization of Prawn Exoskeleton Biowaste*", **Inorganics** 11 (2023) 427.

- (17) Ashritha Salian, Lakkimsetti Lakshmi Praveen, Santhra Krishnan P, **Saumen Mandal**, "Exploration of the role of Mg-O on phase stabilization in solution combustion processed rocksalt structured high entropy oxide (CoCuMgZnNi)O with high dielectric performance", **Ceramics International**, 49 (2023) 31131-31143.
- (18) Sameer Sunil Karle, Robbi Vivek Vardhan, Lakkimsetti Lakshmi Praveen, **Saumen Mandal**, "Effectiveness of spray-pyrolyzed hydrophobic WO<sub>3</sub> coating on stainless steel against blue-green algae growth", **Materials Today Proceedings**, Published online 25 August 2023.
- (19) Perabathula Satish, Ashritha Salian, Komalakrushna Hadagalli, **Saumen Mandal**, "Preparation and structural characteristics of biphasic calcium phosphates from prawn shell bio-waste", **Advances in Applied Ceramics**, 122 (2023) 69-78.
- (20) Robbi Vivek Vardhan, Manjunath G, P Nagaraju, **Saumen Mandal**, "Tracing of ammonia gas by solution-combustion-derived pristine and Nb-doped TiO<sub>2</sub> films: beneficial impact of crystallinity and adsorbed oxygen on the gas response", **Journal of Electronic Materials**, 52 (2023) 6360–6377.
- (21) Ashritha Salian, Akshay Prasad K, **Saumen Mandal**, "Phase stabilized solution combustion processed (Ce<sub>0.2</sub>La<sub>0.2</sub>Pr<sub>0.2</sub>Sm<sub>0.2</sub>Y<sub>0.2</sub>)O<sub>1.6-δ</sub>: An exploration of the dielectric properties", **Journal of Alloys and compounds**, 960 (2023) 170786.
- (22) Ashritha Salian, Pradyut Sengupta, Itheesha V A, Avinash Gowda, **Saumen Mandal**, "A review on high entropy silicides and silicates: Fundamental aspects, synthesis, properties", **International Journal of Applied Ceramic Technology**, 20 (2023) 2635-2660.
- (23) Robbi Vivek Vardhan, G Manjunath, P. Nagaraju, **Saumen Mandal**, "Ammonia gas detection by solution combustion-processed pristine & Ti-doped ZnO transparent films: a reverse effect of doping on gas response", **Journal of Materials Science: Materials in Electronics**, 34 (2023) 986.
- (24) Ashritha Salian, Pavan Pujar, Robbi Vivek Vardhan, Haewon Cho, Sunkook Kim, **Saumen Mandal**, "Evolution of High Dielectric Permittivity in Low-Temperature Solution Combustion-Processed Phase-Pure High Entropy Oxide (CoMnNiFeCr) O for Thin Film Transistors", **ACS Applied Electronic Materials**, 5 (2023) 2608–2623.
- (25) Robbi Vivek Vardhan, Nitesh Eknath Chaudhari, Pavan Pujar and **Saumen Mandal**, "A revisit to solution-processed zirconia and its stabilized derivatives as protective coatings for base-stainless steel", **Critical Reviews in Solid State and Materials Sciences**, 48 (2023) 668-702.
- (26) Ashritha Salian, **Saumen Mandal**, "Review on the deposition, structure and properties of high entropy oxide films: current and future perspectives", **Bulletin of Materials Science**, 45 (2022) 1-21.
- (27) Robbi Vivek Vardhan, Subodh Kumar, **Saumen Mandal**, "Fabrication of minimal capital-intensive scratch-resistant and hydrophobic tungsten oxide film on stainless steel through spray pyrolysis", **Surface and Interface Analysis**, 54 (2022) 510-523.
- (28) Santhra Krishnan P, Ashritha Salian, Saikat Dutta and **Saumen Mandal**, "A roadmap to UV-protective natural resources: classification, characteristics, and applications", **Materials Chemistry Frontiers**, 5 (2021) 7696-7723.

- (29) Ashritha Salian, **Saumen Mandal**, "Entropy stabilized multicomponent oxides with diverse functionality—a review", **Critical Reviews in Solid State and Materials Sciences**, 47 (2021) 142-193.
- (30) G. Manjunath, P. Nagaraju, **Saumen Mandal**, "Ultra-sensitive clogging free combustible molecular precursor-based screen-printed ZnO sensors: a detection of ammonia and formaldehyde breath markers", **Journal of Materials Science: Materials in Electronics** 32 (2021) 5713–5728.
- (31) V. R. Akhil Raj, Komalakrushna Hadagalli, Premanshu Jana, **Saumen Mandal**, "Improved Fracture Toughness and Crack Arrest Ability of Graphene–Alumina Nanocomposite", **Journal of Materials Engineering and Performance** 30 (2021) 1234–1244.
- (32) G. Manjunath, Robbi Vivek Vardhan, Lakkimsetti Lakshmi Praveen, P Nagaraju, **Saumen Mandal**, "Room-temperature detection of ammonia and formaldehyde gases by  $La_xBa_{1-x}SnO_{3-\delta}$  ( $x=0$  and  $0.05$ ) screen printed sensors: effect of ceria and ruthenate sensitization", **Applied Physics A** 127 (2021) 116.
- (33) Komalakrushna Hadagalli, Sulakshana Shenoy, Kaushal R Shakya, G Manjunath, Kartick Tarafder, **Saumen Mandal**, Bikramjit Basu, "Effect of  $Fe^{3+}$  substitution on the structural modification and band structure modulated UV absorption of hydroxyapatite", **International Journal of Applied Ceramic Technology**, Published online 18 (2020) 332-344.
- (34) Robbi Vivek Vardhan, Manjunatha M, **Saumen Mandal**, "Stoichiometric redox reaction-controlled, combustion assisted spray pyrolyzed zirconia films on stainless steel", **IOP SciNotes** 1 (2020) 024806.
- (35) Robbi Vivek Vardhan, Subodh Kumar, **Saumen Mandal**, "A facile, low temperature spray pyrolysed tungsten oxide ( $WO_3$ ): an approach to antifouling coating by amalgamating scratch resistant and water repellent properties", **Bulletin of Materials Science**, 43 (2020) 1-12.
- (36) G. Manjunath, P. Nagaraju, **Saumen Mandal**, "A comparative study on enhancer and inhibitor of glycine nitrate combusted ZnO screen printed sensor: Detection of low concentration ammonia at room temperature", **Journal of Materials Science: Materials in Electronics**, 31 (2020) 10366–10380.
- (37) Komalakrushna Hadagalli, Rahul Kumar, **Saumen Mandal**, Bikramjit Basu, "Structural, compositional and spectral investigation of prawn exoskeleton nanocomposite: UV protection from mycosporine-like amino acids", **Materials Chemistry and Physics**, 249 (2020) 123002.
- (38) Pavan Pujar; Abhishesh Pal; Saumen Mandal, "Combustion aided in situ consolidation of high strength porous ceramic structures with a minimum thermal budget", **Materials Letters** 265 (2020) 127410.
- (39) Manjunath G, Sanjay Pujari, D. R. Patil, **Saumen Mandal**, "A scalable screen-printed high performance ZnO-UV and Gas Sensor: Effect of solution combustion", **Materials Science in Semiconductor Processing** 107 (2020) 104828.
- (40) Abhishesh Pal, Komalakrushna Hadagalli, Poorvi Bhat, Vishesh Goel, **Saumen Mandal**, "Hydroxyapatite - A promising sunscreen filter", **Journal of the Australian Ceramic Society**, 56 (2019) 345–351.
- (41) Manjunath G, Pavan Pujar, Bikesh Gupta, Dipti Gupta, **Saumen Mandal**, "Low-temperature reducible particle-free screen-printable silver ink for the fabrication of high conductive electrodes", **Journal of Materials Science: Materials in Electronics** 30 (20) (2019) 18647–18658.
- (42) Pavan Pujar, Bikesh Gupta, Pradyut Sengupta, Dipti Gupta, **Saumen Mandal**, "Sodium ion incorporated alumina - A versatile anisotropic ceramic", **The Journal of the European Ceramic Society**, 39 (15) (2019) 4473-4486.

- (43) Mayur Jiyalal Prajapati, Robbi Vivek Vardhan, **Saumen Mandal**, "Effect of Lanthanum on the phase evolution of perovskite barium stannate synthesized through polymerized complex method", **Ceramics International** 45 (14) (2019) 17420.
- (44) Robbi Vivek Vardhan, Manjunath G, **Saumen Mandal**, "Fabrication of Solution Combustion Based Transparent Semiconducting Titanium and Zinc Co-Doped Indium Oxide (ITiZO) Films", **Materials Science Forum** 969 (2019) 260-265.
- (45) Pavan Pujar, Dipti Gupta, **Saumen Mandal**, "High-performance low voltage operation of indium zinc tin oxide thin film transistors using chemically derived sodium  $\beta$ -alumina dielectric", **Journal of Materials Science: Materials in Electronics** 30(10) (2019) 9097–9105.
- (46) Komalakrushna Hadagalli, Asish Kumar Panda, **Saumen Mandal**, Bikramjit Basu "Faster biomineralization and tailored mechanical properties of marine resource-derived hydroxyapatite scaffolds with tunable interconnected porous architecture", **ACS Applied Bio Materials** 2 (2019) 2171-2184.
- (47) Ashritha Salian, Pavan Pujar, **Saumen Mandal**, "Facile in-situ formation of high conductive Ag and  $Cu_xO_y$  composite films: a role of aqueous spray combustion", **Journal of Materials Science: Materials in Electronics** 30 (3) (2019) 2888-2897.
- (48) Pavan Pujar, Anusha P, Dipti Gupta, **Saumen Mandal**, "Investigation of sintering kinetics and morphological evolution of silver films from nano-dispersion", **Applied Physics A** 124 (12) (2018), 831.
- (49) G Manjunath, Robbi Vivek Vardhan, Ashritha Salian, Rashi Jagannatha, Mayank Kedia and **Saumen Mandal**, "Effect of annealing temperature assisted phase evolution on conductivity of solution combustion processed calcium vanadium oxide electrodes", **Bulletin of Materials Science** 41 (2018) 126.
- (50) Pavan Pujar, Robbi Vivek Vardhan, Dipti Gupta, **Saumen Mandal**, "A balancing between super transparency and conductivity of solution combustion derived titanium doped indium oxide: effect of charge carrier density and mobility", **Thin Solid Films** 660 (2018) 267-275.
- (51) H. Komalakrishna, Gaurav Kumar, Biswanath Kundu, and **Saumen Mandal**, "Development of Porous Nano-Hydroxyapatite from *Austromegabalanus psittacus* Marine Species Using Camphor and Wheat Flour as Pore Formers", **Advanced Science Letters** 24 (2018) 847–852.
- (52) Manjunath G, Anusha P, Ashritha Salian, Bikesh Gupta and **Saumen Mandal**, "Effect of  $O_2$ ,  $N_2$  and  $H_2$  on annealing of pad printed high conductive Ag-Cu nano-alloy electrodes", **Materials Research Express** 5 (2018) 014014.
- (53) Bikesh Gupta, Pavan Pujar, Sib Sankar Mal, Dipti Gupta, **Saumen Mandal**, "Retention of high dielectric constant sodium beta alumina via solution combustion: role of aluminum ions complexation with fuel", **Ceramics International** 44 (2018) 1500-1511.
- (54) Pavan Pujar, Srinivas Gandla, Mukesh Singh, Bikesh Gupta, Kartick Tarafder, Dipti Gupta, Yong-Young Noh and **Saumen Mandal**, "Development of low temperature stoichiometric solution combustion derived transparent conductive ternary zinc tin co-doped indium oxide electrodes", **RSC Advances** 7 (2017) 48253–48262.
- (55) Komalakrishna H, Shine Jyoth T.G, Biswanath Kundu, **Saumen Mandal**, "Low Temperature Development of Nano-Hydroxyapatite from *Austromegabalanus psittacus*, Star fish and Sea urchin", **Materials Today: Proceedings** 4 (2017) 11933–11938.
- (56) Soyeon Kim, Bernardi Sanyoto, Won-Tae Park, Seyul Kim, **Saumen Mandal**, Jong-Choo Lim, Yong-Young Noh, Jung-Hyun Kim, "Purification of PEDOT:PSS by Ultrafiltration for Highly Conductive Transparent Electrode of All-Printed Organic Devices", **Advanced Materials** 8 (2016) 10149–10154.

- (57) **Saumen Mandal** and Yong-Young Noh, “*Printed Organic Thin-Film Transistor-Based Integrated Circuits*”, **Semiconductor Science and Technology** 30 (2015) pp 064003.
- (58) **Saumen Mandal**, Giorgio Dell'Erba, Alessandro Luzio, Sadir Gabriele Bucella, Andrea Perinot, Alberto Calloni, Giulia Berti, Gianlorenzo Bussetti, Lamberto Duò, Antonio Facchetti, Yong-Young Noh, and Mario Caironi “*Fully-printed, all-polymer, bendable and highly transparent complementary logic circuits*” **Organic Electronics** 20 (2015) pp 132–141.
- (59) **Saumen Mandal** and Monica Katiyar, “*Processing and performance of organic insulators as a gate layer in organic thin film transistors fabricated on polyethylene terephthalate substrate*”, **Bulletin of Materials Science**, Vol. 36(2013) pp 653-660.
- (60) **Saumen Mandal**, Gangadhar Purohit and Monica Katiyar, “*Inkjet Printed Organic Thin Film Transistors: Achievements and Challenges*”, **Materials Science Forum**, Vol 736 (2013) pp 250-274.
- (61) **Saumen Mandal**, Rahul Sharma and Monica Katiyar, “*A hybrid dielectric ink consisting of upto 50 wt% of TiO<sub>2</sub> nanoparticles in polyvinyl alcohol (PVA)*”, *Journal of Chemistry and Chemical Engineering*, Vol 6 (2012) pp 625-630.
- (62) Arjun Singh, **Saumen Mandal**, Vandana Singh, Ashish Garg and Monica Katiyar, “*Inkjet printed PEDOT:PSS for organic devices*”, **Proc. of SPIE**, Vol. 8549 (2012) pp 854936-1.
- (63) Ashish Gupta, **Saumen Mandal**, Monica Katiyar, Yashowanta N Mohapatra, “*Film processing characteristics of nano gold suitable for conductive application on flexible substrates*”, **Thin Solid Films**, Vol 520 (2012) pp 5664–5670.
- (64) Siddhartha Omar, **Saumen Mandal**, Arijit Ashok, A.R. Harish, Monica Katiyar, “*Organic Inverter: Theoretical Analysis Using Load Matching Technique*”, **Microelectronics Reliability**, Vol 51 (2011) pp 2173–2178.
- (65) Ashish Gupta, **Saumen Mandal**, Monica Katiyar and Yashowanta N. Mohapatra, “*Low temperature Solution Process for Fabrication of Electrodes on Flexible Substrate Using Gold Nanoparticles*”, **International Journal of Nanoscience**, Vol 10 (2011) pp 659-663.
- (66) Monica Katiyar and **Saumen Mandal**, “*Evaporated Organic Thin Films*”, *SMC Bulletin*, Vol 1 (2010) pp 12.
- (67) I.V.K. Rao, **Saumen Mandal** and Monica Katiyar, “*Effect of pentacene deposition rate on device characteristics of top contact organic thin film transistors*”, XIV<sup>th</sup> International Workshop on the Physics of Semiconductor Devices, December 16-20, 2007, IIT Mumbai, India; **IEEE Explore Digital Library**, ISBN: 978-1-4244-1728-5, (2007) 625 – 627.
- (68) S. Maitra, **S. Mandal**, P. Karmakar and G. Sil, “*Role of some additives on vitrification characteristics of Triaxial Body*”, *Industrial Ceramic*, Vol 27 (2007) pp 205.
- (69) S. Maitra, S. Bhattacharya, G. Sil and **S. Mandal**, “*Aluminium Titanate Ceramics—A Review*”, **Transactions of the Indian Ceramic Society** Vol 61 (2002) pp 69.

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## PRESENTATION

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- (1) Simma Shiv Prasad, Lakkimsetti Lakshmi Praveen, Kiran Manjappa, **Saumen Mandal**, “*Printed Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> MXene–High Entropy Oxide Hybrid Sensor for Selective Detection of Ammonia and VOCs*”, The 36th AGM of MRSI & 7th Indian Materials Conclave and International Conference on Emerging Materials (MRSI-ICEM-2025), organized by National Institute of Science Education and Research (NISER), Bhubaneswar, Odisha, India, December 17–20, 2025. [Poster].
- (2) Akshaya Navaneetha Krishnan, Durga Jaya Teja Chinnam, Juvva Srinithya, Lakkimsetti Lakshmi Praveen, Soorya Ganesh, **Saumen Mandal**, “*Influence of Low-Temperature Processing on the*

*Mechanical Properties of Ni–Ti–TiC Eutectic Cermet*, 13th National Conference on Condensed Matter Physics and Applications (CMPA 2025), December 08-09, 2025, MIT Manipal, India. [Poster]

- (3) Eashwaren V Namboothiri, Yadanala Pranay Kumar, Lakkimsetti Lakshmi Praveen, **Saumen Mandal**, “*Solid State Reaction processed Screen Printed (MoZnCoCrMn)<sub>3</sub>O<sub>4</sub> High Entropy Spinel Oxide for ammonia gas sensing applications in the fertilizer industry*”, 89th Annual session of the Indian Ceramic Society and International Conference on Research Advancements and Industrial Challenges in Glass and Ceramics (RAICGC-2025), IIT Bombay, India, November 27-29, 2025. [Oral]
- (4) Yadanala Pranay Kumar, Eashwaren V Namboothiri, Lakkimsetti Lakshmi Praveen, **Saumen Mandal**, “*Gastrointestinal and Renal Health Monitoring using High Entropy Oxide-based Gas Sensors by Ammonia gas detection*”, 89th Annual session of the Indian Ceramic Society and International Conference on Research Advancements and Industrial Challenges in Glass and Ceramics (RAICGC-2025), IIT Bombay, India, November 27-29, 2025. [Oral]
- (5) Mahin Saif Nowl, Eashwaren V Namboothiri, Saikat Dutta, **Saumen Mandal**, “*A comparative study of kappa- carrageenan and agar- agar based UV protective coatings incorporated with prawn shell derived amino acids*”, The International Conference on Electron Microscopy along with the XLII Annual Meeting of the Electron Microscope Society of India (EMSI-2025) organized by Indian Institute of Science, Bangalore IN, July 12-14, 2025. [Poster]
- (6) Lakkimsetti Lakshmi Praveen, Debarshi Das, Bhumika Upadhyay, **Saumen Mandal**, “*Gas-sensing performance evaluation of Hydrothermal processed screen-printed (CeLaPrSmY)O<sub>2</sub> gas sensors*”, International Union of Materials Research Society - International Conference in Asia, 2024 (IUMRS-ICA 2024), organized by UGC-DAE Consortium for Scientific Research, Indore, Madhya Pradesh, IN, December 3-6, 2024. [Poster]
- (7) Mahin Saif Nowl, Eashwaren V Namboothiri, Saikat Dutta, **Saumen Mandal**, “*Utilizing prawn shell biowaste for sustainable extraction and coating of uv-absorbing amino acids in pharmaceutical industry*”, International Union of Materials Research Society - International Conference in Asia, 2024 (IUMRS-ICA 2024), organized by UGC-DAE Consortium for Scientific Research, Indore, Madhya Pradesh, IN, December 3-6, 2024. [Poster]
- (8) Bhumika Upadhyay, Lakkimsetti Lakshmi Praveen, **Saumen Mandal**, “*Solution combustion processed screen-printed high entropy oxide gas sensors: role of different fuels*”, International Union of Materials Research Society - International Conference in Asia, 2024 (IUMRS-ICA 2024), organized by UGC-DAE Consortium for Scientific Research, Indore, Madhya Pradesh, IN, December 3-6, 2024. [Poster]
- (9) Lakkimsetti Lakshmi Praveen, Robbi Vivek Vardhan, Sunil Sameer Karle, Vishal Gautam, Subodh Kumar, **Saumen Mandal**, “*Low-temperature solution-processed WO<sub>3</sub> robust coatings for anti-biofouling and gas-sensing applications*”, 88th Annual session of the Indian Ceramic Society and International Conference on Advanced Ceramics for Sustainability (Cera4s 2024), organized by IIT Madras, Chennai, Tamilnadu, IN, November 28–30, 2024. [Oral]
- (10) Lakkimsetti Lakshmi Praveen, Karakavalasa Kailasam, Robbi Vivek Vardhan, **Saumen Mandal**, “*Bio-Inspired, Ultra-hydrophobic Natured Durable Thermal-Sprayed Ytterbium-Oxide Coatings: Review and Perspectives*”, 88th Annual session of the Indian Ceramic Society and International Conference on Advanced Ceramics for Sustainability (Cera4s 2024), organized by IIT Madras, Chennai, Tamilnadu, IN, November 28–30, 2024. [Short Presentation]
- (11) Vishnu Vempati, Vegan V Kanchan, Lakkimsetti Lakshmi Praveen, **Saumen Mandal**, “*Role of morphology on the gas-sensing characteristics of WO<sub>3</sub> screen-printed gas sensors decorated with boron quantum dots*”, 88th Annual session of the Indian Ceramic Society and International Conference on Advanced Ceramics for Sustainability (Cera4s 2024), organized by IIT Madras, Chennai, Tamilnadu, IN, November 28–30, 2024. [Poster]
- (12) Juvva Srinithya, Lakkimsetti Lakshmi Praveen, Soorya Ganesh, Vishal Gautam, **Saumen Mandal**, “*Development of low-temperature processed eutectic cermet for cutting tool applications*”, 5<sup>th</sup>

International Conference on Advances in Mechanical Engineering (ICAME 2024), organized by SRM Institute of Science and Technology, Kattankulathur Campus, Chennai, Tamilnadu, IN, March 20-22, 2024. [Oral]

- (13) Lakkimsetti Lakshmi Praveen, Nitesh Pratap Singh, Ashritha Salian, **Saumen Mandal**, “*Enhanced room-temperature detection of ammonia by hydrothermally processed screen-printed WO<sub>3</sub> gas-sensor*”, International Conference on Functional Materials (ICFM-2024), organized by IIT Kharagpur, Kharagpur, West Bengal, IN, January 9-11, 2024. [Poster]
- (14) Vishal Gautam, Lakkimsetti Lakshmi Praveen, Robbi Vivek Vardhan, **Saumen Mandal**, “*Anti-biofouling behaviour of spray-pyrolyzed WO<sub>3</sub> coating on SS-316: A comparative study on the effect of chemical and vacuum treatments*”, 34th Annual General Meeting of MRSI and 5th Indian Materials conclave, December 12 - 15, 2023, IIT (BHU), Varanasi, India. [Poster]
- (15) Lakkimsetti Lakshmi Praveen, Shagun Kumar, Harsha Satija, **Saumen Mandal**, “*Exploration of free-standing borophene: a material for next generation*”, Indian Conference on Carbon Materials (ICCM-2023), organized by Indian Carbon Society (ICS) - Maharashtra chapter & Materials Group - BARC, Mumbai, IN, November 30 - December 2, 2023. [Poster]
- (16) Ambili V, Mahin Saif Nowl, Saikat Dutta, **Saumen Mandal**, “*Structural, morphological, and microstructural study of naturally derived robust transparent coating from soya protein isolate*”, International Conference on Nanomaterials in Biology (ICNB 2023), Soft Materials Research Society, Jaipur & Biological Engineering Discipline, IIT Gandhinagar, Gujarat, November 19-22, 2023. [Flash Talk & Poster]
- (17) Mahin Saif Nowl, Ambili V, Lakkimsetti Lakshmi Praveen, Sandeep Singh, Saikat Dutta, **Saumen Mandal**, “*A comparative UV absorption study of crustacean exoskeletons: correlation with structural, microstructural, and morphological analysis*”, 2nd International conference on Advances in Minerals, Metals, Materials, Manufacturing and Modelling (ICAM5-2023), National Institute of Technology, Warangal, IN, September 22-23, 2023. [Oral]
- (18) Perabathula Satish, **Saumen Mandal**, “*Hydroxyapatite–Clay Composite for Bone Tissue Engineering: Effective Utilization of Prawn Exoskeleton Biowaste*”, 2nd International conference on Advances in Minerals, Metals, Materials, Manufacturing and Modelling (ICAM5-2023), National Institute of Technology, Warangal, IN, September 22-23, 2023. [Oral]
- (19) Ashritha Salian, **Saumen Mandal**, “*Investigation of phase stabilization, microstructural, optical, and dielectric properties in solution combustion processed high entropy oxide (CoCuMgZnNi)O: A potential anode material of Li-ion batteries*”, International Conference on Women in Electrochemistry (ICWEC 2023), Electrochemical Society of India, IISc Bengaluru, IN, April 7-8, 2023. [Poster] **[Best Paper Award]**.
- (20) Lakkimsetti Lakshmi Praveen, Ashritha Salian, **Saumen Mandal**, “*Precise estimation of Lattice parameter and Optical bandgap of Cobalt Oxide synthesized via Hydrothermal and Solution Combustion process: A comparative study towards Gas-sensing application*”, International school and conference on Evolution of Electronic Structure Theory and Experimental Realization, SRM IST KTR & IIT Madras, Chennai, IN, January 9-12, 2023. [Poster]
- (21) Ashritha Salian, Akshay Prasad K, **Saumen Mandal**, “*Examination of phase stabilization, microstructural, and optical properties of aqueous combustion processed high entropy fluorite oxide (Ce<sub>0.2</sub>La<sub>0.2</sub>Pr<sub>0.2</sub>Sm<sub>0.2</sub>Y<sub>0.2</sub>)O*”, 7<sup>th</sup> International Conference on Nanoscience and Nanotechnology – ICONN 2023, SRM IST KTR, Chennai, IN, March 27-29, 2023. [Oral]
- (22) Sameer Sunil Karle, Robbi Vivek Vardhan, Lakkimsetti Lakshmi Praveen and **Saumen Mandal**, “*Effectiveness of spray-pyrolyzed hydrophobic WO<sub>3</sub> coating on stainless steel against blue-green algae growth*”, First International Conference on Advanced Materials, Manufacturing and Industrial Engineering (AMMIE 2023), School of Mechanical Engineering (SMEC) Vellore Institute of Technology, Chennai, March 23- 24, 2023. [Oral]

- (23) Perabathula Satish, Lakkimsetti Lakshmi Praveen, Komalakrushna Hadagalli, **Saumen Mandal**, “*Effect of temperature on solid state reaction of prawn shell derived phase-pure  $\beta$ -tricalcium phosphate*”, 4th International Conference on Processing and Characterization of Materials, NIT Rourkela, December, 9 – 11, 2022. [Oral]
- (24) Karakavalasa Kailasam, Robbi Vivek Vardhan, **Saumen Mandal**, “*Low-cost fabrication of hydrophobic ceramic coating ( $Yb_2O_3$ ) at low temperature on SS substrate by solution combustion technique*”, “National Symposium on Electrochemical Science and Technology (NSEST 2021)”, June 24th – 25th, 2022, IISc Bengaluru, India. [Oral] [**Best Paper Award**].
- (25) Ashritha Salian, Robbi Vivek Vardhan, Praveen Lakkimsetti, Santhra Krishnan, Pavan Pujar, **Saumen Mandal**, “*Development of low temperature processed high dielectric constant high entropy oxide for electronic applications*”, “XXI International Workshop on Physics of Semiconductor Devices (IWPSD 2021)”, December 14-17, 2021, IIT Delhi, Delhi, India. [Poster]
- (26) Lakkimsetti Lakshmi Praveen, Mahin Saif Nowl, **Saumen Mandal**, “*Time and Temperature variant Progressive Growth of Solvent-assisted Hydrothermal Synthesis of Cobalt Hydroxide Micro-roses*”, “International Conference on Energy and Advanced Materials (ICEAM-2021)”, 21st – 23rd October 2021, Jaypee Institute of Information Technology, Noida, India. [Poster]
- (27) Robbi Vivek Vardhan, Subodh Kumar, **Saumen Mandal**, “*Low temperature solution processed tungsten oxide based robust and water repellent coating on stainless steel*”, 2nd International Conference on “Metallurgy & Materials Technology – Emerging trends, Development & Applications”, 29th – 30th June 2021. [Oral]
- (28) Ashritha Salian, Amal Mohan, Yukti Gupte, **Saumen Mandal**, “*Formulation of Spinel - Type High Entropy Oxide by Solution Combustion Technique*”, “3<sup>rd</sup> International Workshop on high entropy materials (IWHM 2020)”, March 7-8, 2020, IIT Kanpur, Kanpur, India. [Poster]
- (29) Manjunath G, Sanjay Pujari, D. R. Patil, **Saumen Mandal**, “*Screen printing of solution combustion processed ZnO - a promising UV and gas sensors*” Third International Conference on Advanced Materials (ICAM 2019), 09-11th August at Mahatma Gandhi University, Kottayam, Kerala, India.
- (30) Pavan Pujar, Manjunath G, Ashritha Salian, Anusha P, Bikesh Gupta, **Saumen Mandal**, “*Distinct technologies featuring nanoparticles and molecular precursors of silver to deposit electrodes for optoelectronic devices*”, Fourth International Conference on Nanomaterials: Synthesis, Characterization and Applications (ICN 2019) on 12, 13 and 14 April 2019 at Mahatma Gandhi University, Kottayam, Kerala, India. [Oral]
- (31) Manjunath G and **Saumen Mandal**, A novel, cost effective and efficient approach to screen printable silver conductor by direct reduction of initial precursor for printed electronics, International Conference on nanoscience and Nanotechnology, 28-30th January, 2019, SRM University, Chennai. [Oral]
- (32) Mayur Jiyalal Prajapati, Robbi Vivek Vardhan, **Saumen Mandal**, “*Study of Structural, Compositional and Morphological properties of Lanthanum doped Barium Stannate through solution processing*”, National Conference on Emerging Trends in Science, Technology & Application of Electron Microscopy STAEM-2018 & 5th Annual Meeting of the Academy of Microscope Science & Technology (AMST), December 19 – 21, 2018, NIIST, Trivandrum, India. [Poster]
- (33) Robbi Vivek Vardhan, Manjunath G, **Saumen Mandal**, “*Fabrication of Solution Combustion based transparent semiconducting Titanium and Zinc co-doped Indium Oxide (ITiZO) films*”, 2nd International Conference on “Recent Advances in Materials and Manufacturing Technologies”, 19th – 20th November 2018, MLRITM, Hyderabad, India. [Oral]
- (34) Pavan Pujar, Dipti Gupta and **Saumen Mandal**, “*Compositionally altered zinc and tin co-doped indium oxide as both transparent conductor and semiconductor for optoelectronic devices*”

Advanced Ceramics and Nanomaterials for Sustainable Development (ACeND), 19th to 21st September 2018, Christ University. Bengaluru, India. [Oral]

- (35) Vishesh Goel, Pattipati Yeswanth, Robbi Vivek Vardhan and **Saumen Mandal**, “*Synthesis of Solution Processed Transparent Conducting Zinc Doped Indium Oxide Films*”, National Conference on Processing of Materials (NCOPOM18), 19-21 September 2018, NITK Surathkal. [Poster]
- (36) Deeksha M. Kodangal, Poorvi, Komalakrishna H, **Saumen Mandal**, “*Synthesis and characterization of highly dense hydroxyapatite from prawn shells (*Fenneropenaeus indicus*)*”, National Conference on Processing of Materials (NCOPOM18), 19-21 September 2018, NITK Surathkal [Poster] [**Best Poster Award**].
- (37) Robbi Vivek Vardhan, Subodh Kumar, **Saumen Mandal**, “*Development of low-cost antifouling tungsten oxide (WO<sub>3</sub>) coatings on glass and steel substrates via spray pyrolysis*”, International Conference on Surface Engineering, 9th – 11th August 2018, IISc Bengaluru, India. [Poster] [**Best Poster Award**].
- (38) Pavan Pujar, Kartick Tarafder, Dipti Gupta, Yong-Young Noh and **Saumen Mandal**, “*Zinc and tin co-doped ternary indium oxide as a transparent conducting oxide developed through combustible precursor with a minimal thermal investment*” International Union of Material Research Societies- International Conference on Electronic Materials (IUMRS-ICEM), 19th to 24th August, 2018, Yonsei University Daejeon, **South Korea**. [Oral]
- (39) Manjunath G, Robbi Vivek Vardhan, Ashritha Salian, Rashi Jagannatha, Mayank Kedia and **Saumen Mandal**, “*Development of Combustion Synthesized High Conductive Calcium Vanadium Oxide (CaVO<sub>3</sub>) Thin Film Electrodes*”, The International Conference on Nano Science and Nano Technology (ICONSAT-2018), 21-23rd March 2018, Centre for Nano and Soft Matter Sciences, Bengaluru.
- (40) Ashritha Salian, Shridhar S Shirol, Satwik Pandit, Pavan Pujar and **Saumen Mandal**, “*Highly conductive spray printed copper oxide reinforced silver matrix composite films*”, International conference on Engineering Materials, Metallurgy and Manufacturing (ICEMMM2018), 15-16th February 2018, SSN College of Engineering, Chennai, India.
- (41) Yashaswini Karanth, Meghana Banavath, Komalakrishna H, Kaushal R Shakyaa, K Rajendra Udupa, **Saumen Mandal**, “*Development of nano-hydroxyapatite-Fe<sub>2</sub>O<sub>3</sub> based UV absorbing sun screen filter from *austromegabalanus psittacus**”, 2nd Annual Conference Indian Society of Nanomedicine, NANOBIOTECK, 7 – 9th December, 2017, Convention Centre, KTDC - Samudra, Trivandrum, India.
- (42) Komalakrishna H, Kaushal R Shakya, Gavrav Kumar, **Saumen Mandal**, “*Study of biomineralization of porous hydroxyapatite scaffold developed from cuttlefish bone*”, 81<sup>st</sup> Annual session of Indian Ceramic Society and International Conference on Expanding Horizons of Technological Applications of Ceramics and Glasses (EH-TACAG’17), 14-16th December 2017, COE, Pune, India. [Poster]
- (43) Robbi Vivek Vardhan, Sanjay Pujari, Pavan Pujar, **Saumen Mandal**, “*Effect of annealing atmospheres on enhancement of conductivity of indium zinc titanium oxide transparent electrode developed through low temperature solution combustion technique*”. 81<sup>st</sup> Annual session of Indian Ceramic Society and International Conference on Expanding Horizons of Technological Applications of Ceramics and Glasses (EH-TACAG’17), 14-16th December 2017, COE, Pune, India. [Poster]
- (44) Manjunath G, Anusha P, Ashritha Salian and **Saumen Mandal**, “*Effect of O<sub>2</sub>, N<sub>2</sub> and H<sub>2</sub> on annealing of pad printed high conductive Ag-Cu nano-alloys electrodes*”, 4th International Conference on Nanoscience and Nanotechnology (ICONN 2017), 9-11th August, 2017, SRM University, Kattankulathur, India. [Oral]
- (45) Kokila Rajaram, Sahil Hegde, Komalakrishna H, K Rajendra Udupa, **Saumen Mandal**, “*Fabrication and Characterization of Nano-Hydroxyapatite from *Neptunus Sanguinolentus* and *Scylla Serrata**”,

International Symposium for Research Scholar on Metallurgy, Materials Science and Engineering (ISRS 2016), 21st to 23rd December, 2016, IIT Madras, India.[Poster]

- (46) Pavan Pujar, Bikesh Gupta, Vandana Singh, Kartick Tarafder, Dipti Gupta, **Saumen Mandal**, “*Low temperature fabrication of tin doped indium oxide transparent thin films through solution combustion processing without an external fuel*”, 2nd International Conference on Recent Advances in Nanosciences and Nanotechnology-2016 (ICRANN-2016), 19th to 20th December 2016, JNU, New Delhi, Delhi, India. [Poster]
- (47) Komalakrishna H, Gaurav Kumar, Biswanath Kundu, **Saumen Mandal**, “*Development of porous nano-hydroxyapatite from Austromegabalanus psittacus marine species using camphor and wheat flour as pore formers*”, 2nd International Conference on Recent Advances in Nanosciences and Nanotechnology-2016 (ICRANN-2016), 19th to 20th December 2016, JNU, New Delhi, Delhi, India. [Poster]
- (48) Gaurav kumar, Komalakrishna H, **Saumen Mandal**, “*Fabrication of porous hydroxyapatite from cuttlefish bone using camphor and wax as pore formers*”, International Conference on Material Sciences (SCICON' 16), December 19 - 21, 2016, Amrita Vishwa Vidyapeetham, Coimbatore, India. [Poster]
- (49) Anusha, Pavan Pujar, **Saumen Mandal**, “*Low temperature synthesized pad printed conductive silver films from nanoparticle dispersed metallic ink for printed electronic applications*”, International Conference on Material Sciences (SCICON' 16), December 19 - 21, 2016, Amrita Vishwa Vidyapeetham, Coimbatore, India. [Poster]
- (50) Robbi Vivek Vardhan, Pavan Pujar, Vandana Singh, **Saumen Mandal**, “*Solution Combustion Processed Titanium Doped Indium Oxide Transparent Thin Films for Electrode Applications in Optoelectronic Devices*”, 3rd International Conference of Young Researchers on Advanced Materials (IUMRS-ICYRAM 2016), December 11-15, 2016, Indian Institute of Science, Bangalore, India. [Poster]
- (51) Pavan Pujar, Bikesh Gupta, **Saumen Mandal**, “*Low temperature retention of beta and beta” phases of sodium doped alumina-A calcination free approach*”, 3rd International Conference of Young Researchers on Advanced Materials (IUMRS-ICYRAM 2016), December 11-15, 2016, Indian Institute of Science, Bangalore, India. [Oral]
- (52) Komalakrishna H., **Saumen Mandal**, Biswanath Kundu, “*Fabrication and characterization of hydroxyapatite from Cuttlefish bone, Goose barnacles and Prawn shell to bone/hard tissue engineering approach*”, Fourth International Conference on Nanomedicine and Tissue Engineering (ICNT 2016) 12-14 August 2016, Kottayam, Kerala, India. [Oral]
- (53) Komalakrishna H., Shine Jyoth T.G., R. Santhanu Panikara, **Saumen Mandal**, Biswanath Kundu, “*Low temperature development of nano-hydroxyapatite from austromegabalanus psittacus, star fish and sea urchin*”, International Conference on Nanotechnology (ICNano-2016), April, 21-23, 2016, Bangaluru, India. [Poster] **(Best Poster Award)**.
- (54) S.Sunny, P.Pujar, Ashish, D.Chakraborty, **S.Mandal**, “*Morphology of silver film through Nano-particle dispersion: Role of capillary and Marangoni flow*”, International Conference on Nanotechnology (ICNano-2016), April, 21-23, 2016, Bangaluru, India. [Poster]
- (55) Mayur Goti, Pavan Pujar, Mayank Kedia, **Saumen Mandal**, “*Auto-combustion synthesis of complex Transparent Conducting Oxide systems for electronic applications*”, International Conference Smart Materials and Technologies for Emerging Electronics (IC-SMTEE-2016), February 19 and 20, 2016, Mangalore, India. [Poster] **[Best Poster Award]**.
- (56) Pavan Pujar, Mayur Goti, Kartick Tarafder and **Saumen Mandal**, “*Formulation of amorphous Indium Zinc Tin Oxide nanoparticles based semiconducting ink using auto-combustion synthesis*”, International Conference on Ceramic and Advanced Materials for Energy and Environment (CAMEE 2015), December, 14-17, 2015, Bangaluru, India. [Oral]

- (57) **S. Mandal**, G. Dell'Erba, A. Luzio, S. G. Bucella, A. Perinot, N. Bienville, and M. Caironi “*All printed, all carbon-based, transparent complementary circuits*”, “The 10<sup>th</sup> International Conference on Organic Electronics”, June, 11-13, 2014, **Modena, Italy**. [Oral]
- (58) **Saumen Mandal** and Monica Katiyar, “Effect of solvent and substrate on microstructure development of drop casted and spin coated 6, 13-bis (Triisopropyl-silylethynyl) pentacene”, 5<sup>th</sup> International Symposium on Flexible Organic Electronics (ISFOE12), July 2-5, 2012, **Thessaloniki, Greece**.
- (59) **Saumen Mandal** and Monica Katiyar, “*A hybrid dielectric ink consisting of TiO<sub>2</sub> nanoparticle dispersed polyvinyl alcohol (PVA)*”, 5<sup>th</sup> International Symposium on Flexible Organic Electronics (ISFOE12), July 2-5, 2012, **Thessaloniki, Greece**. [Oral]
- (60) Arjun Singh, **Saumen Mandal**, Vandana Singh, Ashish Garg and Monica Katiyar, “*Inkjet printed PEDOT:PSS for organic devices*”, XVI<sup>th</sup> International Workshop on the Physics of Semiconductor Devices (IWPSD-2011), December 19-22, 2011, IIT Kanpur, India. [Poster]
- (61) Raj Kumar, **Saumen Mandal** and Monica Katiyar, “*Optimization of polyaniline ink and its inkjet printing on Polyethylene terephthalate (PET)*”, 4<sup>th</sup> Printing Future Days 2011, November 7-10, 2011, Institute for Print and Media Technology at Chemnitz University of Technology, **Germany**. [Oral]
- (62) **Saumen Mandal**, Ravindra Naik Bukke and Monica Katiyar, “*Structural Study of Solution Processed 6, 13-bis (Triisopropyl-silylethynyl) Pentacene Films*”, 3<sup>rd</sup> International Symposium on Material Chemistry (ISMC-2010), December 7-11, 2010, BARC, India. [Poster]
- (63) Raj Kumar, **Saumen Mandal**, Monica Katiyar, “*Studies of Doped Polyaniline Dispersions and Films Formed by Spin Coating, Drop Casting and Inkjet Printing on Flexible Substrate*”, 3<sup>rd</sup> International Symposium on Material Chemistry (ISMC-2010), December 7-11, 2010, BARC, India. [Poster]
- (64) **Saumen Mandal**, Chaitanya Saxena, Vandana Singh, Monica Katiyar, “*Inkjet printed capacitor using Poly-4-vinylphenol*”, 6<sup>th</sup> Global Plastic Electronics Conference & Exhibition 2010, October 19-21, **Dresden, Germany**. [Oral]
- (65) **Saumen Mandal** and Monica Katiyar, “*Effect of molecular alignment on off-state current in pentacene based organic thin film transistor*”, International Conference on Nano Science and Technology (ICONSAT 2010), February 17-20, 2010, IIT Mumbai, India. [Poster]
- (66) Ashish Gupta, **Saumen Mandal**, Monica Katiyar and Yashowanta N. Mohapatra, “*Low temperature Solution Process for Fabrication of Electrodes on Flexible Substrate Using Gold Nanoparticles*”, International Conference on Nano Science and Technology (ICONSAT 2010), February 17-20, 2010, IIT Mumbai, India. [Poster] **[Best Poster Award]**
- (67) Siddhartha Omar, **Saumen Mandal**, Arjit Ashok, Monica Katiyar and A.R. Harish, “*Pentacene based OTFT for high gain inverter*”, XV<sup>th</sup> International Workshop on the Physics of Semiconductor Devices, December 15-19, 2009, Solid State Physics Laboratory, Delhi & Jamia Millia Islamia, New Delhi, India. [Poster] **[Best Poster Award]**
- (68) **Saumen Mandal** and Monica Katiyar, “*Organic insulators for transparent & flexible OTFT*”, International Conference on Materials for Advanced Technologies (ICMAT) 2009 and Int'l Union of Materials Research Societies-International Conference in Asia (IUMRS-ICA) 2009, 28 June-3 July, **Singapore**. [Poster]
- (69) **Saumen Mandal**, Romi Singh and Monica Katiyar, “*Role of octadecyltrichlorosilane on the performance of pentacene based organic thin film transistor*”, Processing and Fabrication of Advanced Material XVII, December 15 - 17, 2008, IIT Delhi, India. [Oral]

- (70) Ashish Gupta, **Saumen Mandal**, Priyanka, Monica Katiyar and Yashowanta N. Mohapatra, “*Nano gold ink for printing micro structure on flexible substrate*”, ISMC-2008, December 2 – 6, 2008, BARC, India. [Poster]
- (71) I. V. K. Rao, **Saumen Mandal** and Monica Katiyar, “*Effect of pentacene deposition rate on device characteristics of top contact organic thin film transistors*”, XIV<sup>th</sup> International Workshop on the Physics of Semiconductor Devices, December 16-20, 2007, IIT Mumbai, India. [Poster]

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#### INTERNATIONAL/NATIONAL TECHNICAL TALKS

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- (1) Invited talk on “Advanced Ceramics - The New Frontier in Modern-day Technology” in One Day National Seminar on “Ceramics: Education to Enterprise”, organized by Indian Ceramic Society Karnataka Chapter, and American Ceramic Society, Southwest India Chapter, at Department of Ceramic and Cement Technology, P D A College of Engineering, Kalaburagi, Karnataka, on 7<sup>th</sup> March 2026.
- (2) Invited technical talk on “Scalable screen-printed ceramic gas sensors for the room temperature towards smart detection of food spoilage” at the School of Engineering, Central University of Karnataka, Kadaganchi, Kalaburagi, Karnataka, India, on 6<sup>th</sup> March 2026.
- (3) Invited talk on “Scalable screen-printed ceramic gas sensors for the room temperature detection of toxic gases” in the two-day National Seminar on “Sustainable Glass and Ceramic Manufacturing: Pathways to a Greener Future (NSSGCM-26)”, organized by Indian Ceramic Society, Kolkata Chapter, in association with CSIR-Central Glass and Ceramic Research Institute (CSIR-CGCRI), Kolkata at CSIR-CGCRI, Kolkata, India, from February 19 to 20, 2026.
- (4) Invited talk on “Solution-processed semiconducting metal oxide-based screen printed gas sensors for the room temperature detection of toxic gases” in “International Conference on Frontier in Ceramic Materials (ICFCM2024)”, Department of Ceramic Engineering, IIT (BHU), Varanasi, India, from December 16-18, 2024.
- (5) Invited talk on “Solution combustion-processed semiconducting metal oxide-based gas sensors for the detection of toxic gases at room temperature” in “4<sup>th</sup> Global Ceramic Leadership Roundtable on Ceramics for Frontier Sectors: Emerging Advances and Prospects (CerAP2024)”, Centre for Space Science and Technology, Indian Institute of Technology Roorkee, India from 11-12 March, 2024.
- (6) Invited Lecture on “Combustion processed high entropy oxide dielectrics: a solution for microelectronic applications”, in International Conference on Functional Materials (ICFM 2024), Materials Science Centre, Indian Institute of Technology Kharagpur from 9 – 11 January, 2024.
- (7) Contributory Lecture on “Comparative study on solution-processed tungsten oxide and ytterbium oxide coatings on stainless steel for marine antifouling applications” in “International Conference on Global Trends in Traditional to Space Ceramics (GT-STC’22)”, Department of Ceramic Engineering, IIT BHU, Varanasi, India from 8-9<sup>th</sup> December 2022.
- (8) Contributory Lecture and Poster Presentation on “Solution combustion derived metal & metal oxides for thin film transistors and gas sensing applications” in “12<sup>th</sup> Indo-German Frontiers of Engineering Symposium (INDOGFOE)”, Bremen, Germany from September 29 to October 2, 2022 jointly organized by the Department of Science and Technology (DST), India and the Alexander von Humboldt Foundation, **Germany**.
- (9) Invited talk on “Facile, low-temperature, solution combustion processed metal oxide thin films for electronics applications” and “Development of marine bioceramics for bone regeneration and UV protections” in two-week refresher course on “Contemporary Development Trends in Materials Science and Engineering” organized by UGC – Human Resource Development Centre, Jawaharlal Nehru Technological University Hyderabad, Kukatpally, Hyderabad-500085, August 09<sup>th</sup> to 24<sup>th</sup>, 2021.
- (10) Invited talk on “Synthesis of nanomaterials and growth of thin films” in Workshop on “Advanced Physics of Emergent Materials and Electronic Devices-2021 (WAPEMED-21)” organized by

Department of Physics and Department of Materials Science and Engineering, Pandit Deendayal Energy University, Gandhinagar, Gujarat 382007, June 21<sup>st</sup> to 23<sup>rd</sup>, 2021.

(11) Invited talk on “Technology to develop porous hydroxyapatite from marine benthos with tunable porous architecture and tailored mechanical properties” in “Biomedical Implant Consortium” organized by Kalam Institute of Health Technology, AMTZ Campus, Pragati Maidan, VM Steel Project S.O., Visakhapatnam on 19th November, 2018.

(12) Invited talk on “Development of high strength porous hydroxyapatite scaffold for bone regeneration using marine benthos”, in National Workshop on “ICME Approaches to Innovation in Biomedical Implants”, Materials Research Centre, Indian Institute of Science, Bengaluru, August 11th – 12th, 2018.

(13) Invited talk on “Marine bio-ceramics” in “New Materials for Healthcare: Idea Generation Workshop” organized by Indian Institute of Science Bangalore and TATA Steel on 6th May, 2018 at The Oberoi, Bangalore.

(14) Invited talk on “Fully printed transparent flexible complementary circuits” in IMPRESSIONS '16 organized by Department of Printing and Media Engineering, MIT, Manipal University, Manipal, India on 5th -6th February, 2016.

(15) Invited talk on “Structural, elemental and surface characterisation of nanostructured materials” in a three-day workshop on "Nano-structured materials and their applications in Catalysis & Fuel Cells", on 29th September-1st October, 2016 at NITK, Surathkal.

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## TEACHING

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MT160 - Introduction to Materials Science & Technology;  
MT214 Mineral Dressing,  
MT264 Electronic Properties of Materials,  
MT325 Fuels, Furnaces, and Refractories,  
MT351 - Ceramics and Refractories,  
MT355 - Powder Metallurgy,  
MT417, 408 Thin films, Coating and Applications,  
ML705 Ceramics Engineering, MT706 Ceramic Technology,  
NT700, MT721 Introduction to Nanoscience & Nanotechnology,  
MT722 Quantum theory of Nanoscale Materials,  
MT705 Materials Laboratory,  
NT748 Nanomaterials Synthesis Laboratory,  
NT749 Materials Characterization Laboratory,  
MT724 Nanomaterials Synthesis and Characterization laboratory

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## ADMINISTRATIVE

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**Institute Level:** (1) Warden, Quality and Maintenance (Q&M)(Karavali (Block 1), Aravali (Block 2), Vindhya (Block 3), Satpura (Block 4), Sahyadri (Block 7), NITK Surathkal, 9<sup>th</sup> October 2023 – 13<sup>th</sup> June 2024. (2) Co-Ordinator, Dept. of MME, Career Development Centre, NITK Surathkal, August 2023 – August 2025. (3) Warden, Block VII (Sahyadri), NITK Surathkal, January 2018 – August 2021., (4) Member of Library Advisory Committee , NITK Surathkal, July 2025 – till date.

**Department Level:**

(1) Secretary of Doctoral Research Programme Committee (DRPC) of Department of Metallurgical and Materials Engineering, July 2023 – July 2024.

(2) Faculty Advisor of B.Tech.(Metallurgical and Materials Engg) (a) Admission Batch 2015, June 2016-June, 2017, June 2017-June 2018, June 2018-June 2019, (b) Admission Batch 2019, July 2019- June 2020, (c) Admission Batch 2020, October 2020-May 2024, (d) Admission Batch 2024, August 2024-May 2028.

(3) Secretary of Department Post Graduate Committee (DPGC) of Department of Metallurgical and Materials Engineering, June 2019 - July 2021 and July 2025-till date.

(4) Time table in-charge of Department of Metallurgical and Materials Engineering, June, 2016-June, 2017 and June, 2017 – June, 2018.

(5) Faculty in-charge– Heat Treatment Lab (March 2019 – July 2024). XRD Lab and DSC Lab (March 2019 – till now).

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## STUDENT GUIDED

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PhD – Seven (Awarded), Four (Ongoing),  
Master of Technology – Thirty-four (Completed), Two (Ongoing), Master of Science – One (Completed),  
Bachelor of Technology – Thirty-nine (Completed), Three (Ongoing)

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## ORGANIZER OF CONFERENCES/ WORKSHOP

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- (1) Coordinator, Workshop on UV-Protective Coatings for high school & PUC Students, NITK Surathkal, January 27<sup>th</sup>, 2025
  - (2) Coordinator, 3<sup>rd</sup> Five-day National Workshop on Advanced Materials and Characterization Techniques (AMCT 2025), NITK Surathkal, January 27<sup>th</sup> – 31<sup>st</sup>, 2025
  - (3) Coordinator, Five-day National E-Workshop on Surface Characterization: Tools and Applications (SCTA-2020), NITK Surathkal, December 14<sup>th</sup> - 18<sup>th</sup>, 2020
  - (4) Coordinator, Five-day National Workshop on Advanced Materials and Characterization Techniques (AMCT 2019), NITK Surathkal, August 7<sup>th</sup> – 11<sup>th</sup>, 2019
  - (5) Treasurer, National Conference on Processing of Materials - 2018 (NCOPOM-2018), NITK Surathkal, September 19 and 21, 2018
  - (6) Coordinator, TEQIP-II sponsored Two-day Workshop on “Materials for Biomedical and Specialty Applications” (MBSA-2017), NITK Surathkal, 23<sup>rd</sup> Jan -24<sup>th</sup> January 2017
  - (7) Organizing committee member, TEQIP-II sponsored Three-day Workshop On “Nano–structured Materials and their applications in Catalysis and Fuel Cells” (“NMCF”2016), NITK Surathkal, 29<sup>th</sup> September–1<sup>st</sup> October 2016
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## LABORATORY ESTABLISHMENT

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**Established three laboratories** at NITK in the last 10 years, which are: (a) Thin films & Coating Lab (RM 224), (b) Ceramic Processing lab (RM223) and (c) FTIR Lab (RM224A).

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## PEER-REVIEW ACTIVITIES - Journals (Reviewer)

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Physica Status Solidi A: Applications and Materials Science, Materials Letters, Materials Science and Engineering C, Dyes and Pigments, IEEE Transactions on Electron Devices, Flexible and Printed Electronics, Applied Surface Science, Materials Chemistry and Physics, Microelectronics International, Journal of Nanoscience and Nanotechnology, Journal of Alloys, and Compounds, Journal of Materials Science: Materials in Electronics, Transaction of the Indian Ceramics Society.

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## PROFESSIONAL AFFILIATION:





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Life member of “Indian Ceramic Society” (SL–390),  
“Electron Microscope Society of India” (1072),  
“Indian Institute of Metal” (53831),  
“The Institute of Engineers (India)” (M-152441) and  
“The Electrochemical Society of India” (LM-380)  
“Materials Research Society of India (MRSI)” (LMB4005)  
Member of “Indian Institute of Ceramics” (IC/2011/2023/1197/M),  
Member of “The European Ceramic Society” (EUR26009).

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## PROFILE LINKS

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-  **Website:** <https://smandal1.wixsite.com/2019>  
<https://mme.nitk.ac.in/professor/saumen-mandal>
  -  **Google Scholar:** <https://scholar.google.com/citations?user=RkHXEIEAAAAJ&hl=en>
  -  **Scopus ID:** 55820701300
  -  **ORCID:** 0000-0003-2867-1204
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