

Dr. Samar Kumar Medda

LIST OF PUBLICATIONS:

Summary: in SCI Journal Papers = 32 numbers; in Conference Proceedings = 1 numbers; Presentations at Symposia/Conference (abstracts) = 29

(a) LIST OF PUBLICATIONS IN JOURNALS:

1. "Inorganic-organic hybrid coatings on polycarbonate. Spectroscopic studies on the simultaneous polymerization of methacrylate and silica networks"
S. K. Medda, D. Kundu and G. De, *J. Non Cryst. solids* 2003, 318,149-156. IF: **1.766**; [https://doi.org/10.1016/S0022-3093\(02\)01862-8](https://doi.org/10.1016/S0022-3093(02)01862-8)
2. "Metal nanoparticle doped coloured films on glass and polycarbonate substrates"
S. K. Medda, M. Mitra, S. De, S. Pal and G. De, '*Pramana*, **2005**, 65, 931-936. IF: **0.649**
3. "Synthesis of Au-nanoparticle doped SiO₂-TiO₂ films: tuning of Au-surface plasmon band position through controlling the refractive index"
S. K. Medda, S. De and G. De, *J. Mater. Chem.* **2005**, 15, 3278-3284. (IF: **6.626**)
DOI: 10.1039/b506399j
4. "Nonlinear optical absorption and switching properties of gold nanoparticle doped SiO₂-TiO₂ sol-gel films"
N. Venkatram, R. Sai Santosh Kumar, D. Narayana Rao, **S. K. Medda**, S. De and G. De, *J. Nanosci. Nanotech.*, **2006**, 6, 1990-1994. (IF: **1.556**); <https://doi.org/10.1166/jnn.2006.319>
5. "Refractive index controlled plasmon tuning of Au nanometals in SiO₂-ZrO₂ film matrices"
S. De, **S. K. Medda**, and G. De, *J. Nanosci. Nanotech.* **2008**, 8, 3868-3876. (IF: **1.556**); <https://doi.org/10.1166/jnn.2008.202>
6. "Metal nanoparticle doped coloured coatings on glasses and plastics through tuning of surface plasmon band position"
G. De, S. De, **S. K. Medda** and S. Pal *Bull. Mater Sci.*, **2008**, 31, 479-485. IF: **1.01**
7. "Tuning of Ag-SPR band position in refractive index controlled inorganic-organic hybrid SiO₂-PEO-TiO₂ films"
S. K. Medda, M. Mitra and G. De, *J. Chem. Sci.(Spl. issue)* **2008**, 120, 565-572. (IF: **1.191**); <https://doi.org/10.1007/s12039-008-0086-0>

8. "Inorganic-organic nanocomposite based hard-coatings on plastics using *in-situ* generated nano SiO₂ bonded with ≡Si-O-Si-PEO hybrid network"
S. K. Medda and G. De, *Ind. & Eng. Chem. Res.* **2009**, *48*, 4326-4333. (IF **2.587**)
<https://doi.org/10.1021/ie801632k>
9. "Inorganic–Organic Nanocomposite Based Hard Coatings on Plastics Using In Situ Generated Nano-SiO₂ Bonded with ≡Si-O-Si-PEO Hybrid Network", Samar Kumar Medda and Goutam De*, *Ind. & Eng. Chem. Res.* **2009**, *48*, 6906 (*additions & corrections*). IF: **2.587**
10. "Ag-TiO₂ Nanoparticle Codoped SiO₂ Films on ZrO₂ Barrier-Coated Glass Substrates with Antibacterial Activity in Ambient Condition" A. Mukhopadhyay, S. Basak, J. K. Das, S. K. Medda, K. Chattopadhyay and G. De, *ACS Appl. Mater. Interface* **2010**, *2*, 2540-2546. (IF: **6.723**); <https://doi.org/10.1021/am100363d>
11. "Au@MO₂ (M= Ti, Zr, Si) Films on Glass by Ex Situ Incorporation Approach" Arun R Chandran, S. Pal, S. K. Medda and G. De, *Sci. Adv. Mater.* **2012**, *4*, 663-668. IF: **3.308**
12. "Superhydrophobic Films on Glass Surface Derived from Trimethylsilanized Silica Gel Nanoparticles" D. Goswami, S. K. Medda, and G. De, *ACS Appl. Mater. Interface* **2011**, *3*, 3440-3447. (IF: **6.723**); <https://doi.org/10.1021/am200666m>.
13. "Covalently functionalized reduced graphene oxide by organically modified silica: a facile synthesis of electrically conducting black coatings on glass"
K. Bhowmik, S. Pramanik, S. K. Medda and G. De*, *J. Mater. Chem.* **2012**, *22*, 24690-24697. (IF: **6.626**); DOI: 10.1039/c2jm35429b.
14. "Wavelength Selective Antireflective Coatings on Plastics with Hydrophobic Surfaces"
S. De; D. Jana; **S. K. Medda** and G. De, *Ind. & Eng. Chem. Res.* **2013**, *52*, 7737-7745. (IF **2.587**); <https://doi.org/10.1021/ie400395c>
15. **Featured Article:**
"Wavelength Selective Antireflective Coatings on Plastics with Hydrophobic Surfaces"
S. De; D. Jana; **S. K. Medda** and G. De in *Advances in Engineering*, published on **20/03/2014**.
16. "Durable superhydrophobic ZnO—SiO₂ films: A new approach to enhance the abrasion resistant property of trimethylsilyl functionalized SiO₂ nanoparticles on glass"

- I. Das, M. K. Mishra, S. K. Medda and G. De*, RSC Adv., **2014**, 4 (98), 54989 – 54997. (IF: **3.84**); DOI: 10.1039/C4RA10171E.
17. "Hierarchically Designed Bioactive Glassy Nanocoatings for Faster and Uniformly Dense Apatite Growth"
I. Das, S. K. Medda and G. De* S. Fagerlund, L. Hupa, M. A. Puska and P. K. Vallittu, *J. Am. Ceram. Soc.*, **2015**, 98 [8] 2428–2437 (IF: **2.61**)
DOI: 10.1111/jace.13626
18. "ZrO₂ incorporated TiO₂ based solar reflective nanocomposite coatings on glass to be used as energy saving building components"
Suparna Bhattacharyya, Srikrishna Manna* and Samar Kumar Medda*
SN Appl. Sci. **2019**, 1:1464-71 (IF: 2.11); <https://doi.org/10.1007/s42452-019-1169-x>
19. "Photocatalytic evaluation of anatase TiO₂ coating on ceramic tiles by Raman spectroscopy"
Samar Kumar Medda^{1,*}, Srikrishna Manna¹ and Goutam De^{2,*}
Trans. Ind. Ceram. Soc., **2020**, 79 (1), 13-17. (IF: 1.014).
<https://doi.org/10.1080/0371750X.2019.1696233>.
20. "Tailored piezoelectric performance of Self-Polarized PVDF-ZnO composites by optimization of aspect ratio of ZnO nanorods"
Shewli Pratihari¹, Samar Kumar Medda², Shrabane Sen^{1*}, P. Sujatha Devi^{3*}
Polymer Composites, **2020**, 1–13. (IF: 2.265); <https://doi.org/10.1002/pc.25624>
21. "Fabrication of Germanium-on-insulator in a Ge wafer with a crystalline Ge top layer and buried GeO₂ layer by Oxygen ion implantation"
Vishal Kumar Aggarwal, Ankita Ghatak, Dinakar Kanjilal, Debdulal Kabiraj, Achintya Singha, Sandip Bysakh, Samar Kumar Medda, Supriya Chakraborty, A.K. Raychaudhuri*
Materials Science & Engineering B, **2020**, 260, 114616-24. (IF: 4.706)
<https://doi.org/10.1016/j.mseb.2020.114616>.
22. "Ammonia Sensing by Sn_{1-x}V_x O₂ Mesoporous Nanoparticles"
Nirman Chakraborty, Ambarish Sanyal, Sagnik Das, Debdulal Saha, Samar Kumar Medda, and Swastik Mondal*
ACS Appl. Nano Mater., **2020**, 3, 8, 7572–7579 (IF: 3.939)
<https://doi.org/10.1021/acsanm.0c01183>.

23. "Nano ZnO decorated ZnSnO₃ as efficient fillers to PVDF: toward simultaneous enhancement of energy storage density and efficiency and improved energy harvesting activity"
Abhishek Sasmal, Samar Kumar Medda, P. Sujatha Devi*, Shrabanee Sen*,
Nanoscale, **2020**, 12 (40), 20908-20921 (IF: 6.895)
DOI: 10.1039/D0NR02057E
24. "Enhanced dielectric, ferroelectric, energy storage and mechanical energy harvesting performance of ZnO–PVDF composites induced by MWCNTs as an additive third phase"
Shewli Pratihari, Abhishek Sasmal, Ankita Ghatak, Samar Kumar Medda,
Shrabanee Sen*, Soft Matter, **2021**, 17, 8483-95 (IF: 3.679)
DOI: 10.1039/d1sm00854d.
25. "A Preparative Approach of TiO₂-ZrO₂ Coating Using Aquo-Based TiO₂ Precursor Useful for Light Reflective Application"
Suparna Bhattacharyya, Samar Kumar Medda* and Milan Kanti Naskar*
Trans. Ind. Ceram. Soc., **2021**, 80 (4), 227-233. (IF: 1.729)
<https://dx.doi.org/10.1080/0371750X.2021.2004237>
26. "Mesoporous silica-based abrasion resistant antireflective (AR)-cum-hydrophobic coatings on textured solar cover glasses by spray coating technique"
Srikrishna Manna, Milan Kanti Naskar and Samar Kumar Medda*, RSC Mater. Adv. **2022**, 3, 3208-3217 (IF: 5.0). DOI: 10.1039/D1MA01141C.
27. "Antireflection cum photocatalytic with superhydrophilic based durable single layer mesoporous TiO₂ - ZrO₂ coating surface for efficient solar photovoltaic application"
Srikrishna Manna, Deepanjana Adak , Silajit Manna , Santanu Maity*, Sunirmal Jana , Raghunath Bhattachary, Samar Kumar Medda *
Sustain. Energy Technol. Assess **2023**, 57, 103236 (IF: 8.0)
<https://doi.org/10.1016/j.seta.2023.103236>.
28. "Room temperature curable inorganic–organic hybrid nanocomposite hydrophobic coating: mechanistic understanding of the role of Ti(IV) and the diamine based curing agent"
S. Manna, S. Maity, M. K. Naskar and S. Kr. Medda*, *New J. Chem.*, **2023**, 47, 12992–13003. (IF:3.925)
DOI: 10.1039/d3nj00274h

29. "Construction of a 3D/2D Z-Scheme Heterojunction for Promoting Charge Separation and Augmented Photocatalytic Hydrogen Evolution"
Soumita Samajdar, Srabanti Ghosh*, Maiyalagan Thandavarayan, Samar Kumar Medda, Srikrishna Manna. and Mamata Mohapatra, *Energy Fuels* 2023, 37, 18, 14290–14302. (IF: 4.654); <https://doi.org/10.1021/acs.energyfuels.3c01845>
30. "Room temperature cured silver nanoparticles embedded hybrid nanocomposite coatings: Processing and property evaluation" S. Manna*, P. Pal, M. K. Naskar and S. K. Medda*, *New J. Chem.*, 2024, 43, 2371- (IF: 3.925)
DOI: 10.1039/d3nj05382b.
31. " Ordered Mesoporous Slippery Silica Coatings on Photovoltaic Cover Glasses to Enhance Photocurrent with Sustainability for Large–Scale Applications" Goutam De,* Srikrishna Manna, and Samar Kumar Medda, *ACS Appl. Energy Mater.* **2024**, 7 (14), 5706-5720 (IF: 6.4).
32. Long-term stability of Ag NPs in room temperature cured SiO₂-ZrO₂ crosslinking hybrid robust coating towards enhanced weather resistance properties and its antibacterial applications", S. Manna*, M. K. Naskar, D. Saha, P. Pal and S. Kr. Medda, *RSC New J. Chem.*, **2025**, 49 (17), 6914-6929 ((IF: 3.925) (accepted on 26th March, 2025) along with publication as 'front cover art'. DOI: 10.1039/d5nj00611b.

(b) PUBLICATION IN CONFERENCE PROCEEDINGS:

"Gold nanoparticle doped SiO₂-TiO₂ coatings on ordinary glass; generation of different colour by changing matrix refractive index" S K. Medda, S. De and G. De, *Proc. Int. Conf. on Nano-materials: Synthesis, Characterisation and Application*, 2004, Kolkata, Eds. S.Bandyopadhyay et al., (Tata McGraw Hill, New Delhi) **2005**, pp. 485-489.

• Poster preparation/presentation in the conference:

- (xxi) "Development of sol–gel based antireflective coatings on quartz glass for the optics of high power Nd: phosphate glass laser" poster presented by *Susmita Podder, Srikrishna Manna, Shreyashi Kabi, Samar Kumar Medda, V. V.V. Subrahmanyam, Chandrachur Mukherjee and Sunirmal Jana,** in the "XXVII International Congress on Glass (ICG)" held during January 20-24, **2025** at Viswa Bangla Convention Centre, Kolkata, India.

- (xx) "Room temperature curable inorganic-organic hybrid nanocomposite coatings embedded in-situ generated stable Ag NPs: Properties evaluation and applications" , CL-S5-3: Contributory Lecture (oral) presented by Srikrishna Manna*, *Prabir Pal, and Samar Kumar Medda**, in the "XXVII International Congress on Glass (ICG)" held during January 20-24, **2025** at Viswa Bangla Convention Centre, Kolkata, India.
- (xix) "Fabrication of dielectric mirror for performance at 633 nm by sol-gel dip coating technique" by S. Podder, S. Kabi, S. Manna, C. Mukherjee, S. K. Medda, S. Jana in the ICEECG, 2023 held during 19-21 December, **2023** at CSIR-CGCRI, Kolkata, India
- (xviii) "Fabrication of antireflective cum self-cleaning sol-gel coating for efficient photovoltaic application" by S. Manna, D. Adak, S. Manna, S. Maity, S. Jana, R. Bhattacharya, S.K. Medda in the ICEECG, 2023 held during 19-21 December, **2023** at CSIR-CGCRI, Kolkata, India
- (xvii) "Fabrication of Titania-Triblock Copolymer Nanocomposite based Sol-gel Coating on Glass for Efficient Self-cleaning of PV Modules" by P. Mondal, D. Adak, P. Kayal, S. Manna, S. Manna, S. K. Medda, R. Bhattacharya, S. Maity, S. Jana, In the International Conference on Advances in Glass and Glass-ceramics ICAGGC 2022 held during 23-25 August, **2022** at CSIR-CGCRI, Kolkata, India.
- (xvi) "Silica based mesoporous antireflective (AR) cum hydrophobic coatings on solar cover glass for domestic and agricultural applications" by Srikrishna Manna, Sitendu Mandal and Samar Kumar Medda in the 85th Annual Session of InCerS and International Virtual and Hybrid Conference on Advances in Ceramic and Cement Technology: Materials and Manufacturing (IvaCCT-**2021**).
- (xiv) "Investigations into the role of crystal and electronic structures in ammonia sensing properties of vanadium doped tin (iv) oxides" by Nirman chakraborty, Ambarish Sanyal, Sagnik, Das, Debdulal, Saha, S. K. Medda, Swastik Mondal in the 2nd Indian materials conclave and 31st Annual General Meeting of MRSI-Kolkata, 11-14th, February 11-14, 2020.
- (xiii) "Investigations on the role of crystal structure in ethanol sensing properties of vanadium doped oxides of tin (iv)" by Nirman chakraborty, Ambarish Sanyal, Sagnik, Das, Debdulal, Saha, S. K. Medda, Swastik Mondal in the *Young scientist colloquium, SINP, Kolkata* held during 16-17 September, **2019**.

- (xii) “ZrO₂ incorporated TiO₂ based transparent hard reflective coatings on glass useful as a building component” presented by Srikrishna Manna, Suparana Bhattacharyya and Samar Kumar Medda* in the “*International Conference on Complex and Functional Materials (ICCFM 2018)*” organized by S. N. Bose National Centre for Basic Sciences held during 13–16 December, **2018** at Viswa Bangla Convention Centre, Kolkata in celebration of 125th birth anniversary of S. N. Bose.
- (xi) “ZrO₂ and TiO₂-ZrO₂ based reflective coatings on glass substrates useful as building component” presented by Samar Kumar Medda, Srikrishna Manna, Suparna Bhattacharyya and Goutam De in the National Seminar on “Innovative Process Technology for Sustainable Development (IPTSD-2018)” Jointly organized by Indian Institute of Chemical Engineers, Calcutta Regional Centre, JU Campus, Kolkata and CSIR-Central Glass and Ceramic Research Institute held during 23–24 February, **2018. Received 2nd best poster award.**
- (x) “Trimethylsilyl functionalized durable superhydrophobic ZnO–SiO₂ films on glass” by Indranee Das, Manish Kr Mishra, Samar K Medda and Goutam De* in ‘Workshop on Indian Innovations in Materials Research: New Materials and Processes’ held at CSIR-CGCRI, Kolkata, India during June 25-27, **2015 (Received 3rd best oral presentation award).**
- (ix) “*Bioactive glass-nanosphere/nanofibre based composite coatings useful as excellent scaffolds for the growth of apatite and cells*” by Indranee Das¹, Samar K. Medda¹, Goutam De^{1*}, Susanne Fagerlund², Leena Hupa², Mervi A. Puska³ and Pekka K. Vallittu³ in an international conference (International Union of Materials Research Society – International Conference in Asia – 2013) organized by Indian Institute of Science Bangalore during Dec 16-20, **2013.**
- (viii) “Electrically conducting reduced graphine oxide bonded with organically modified SiO₂ composite black coating on glass” by K. Bhowmik, S. Pramanik, **S. K. Medda** and G. De at one day research Scholar’s day held on July 18, **2012** in CSIR-CGCRI, Kolkata.
- (vii) “Silica nanoparticles based superhydrophobic films with antireflection property on glass surface” by D. Goswami, **S. K. Medda** and G. De at International Symposium on Advances in Nanomaterials held during December 6-7, **2010** in CSIR-CGCRI, Kolkata.
- (vi) “Ag-TiO₂ nanoparticle Co-doped SiO₂ films on ZrO₂ barrier-coated glass substrates with antibacterial activity in ambient condition” by A. Mukhopadhyay,

S. Basak, J. K. Das, **S. K. Medda**, K. Chattapadhyay and G. De at International Symposium on Advances in Nanomaterials held during December 6-7, **2010** in CSIR-CGCRI, Kolkata.

- (v) "Coloured hard-coatings on polycarbonate substrates using plasmon tuning of embedded Ag nanoparticles" by **S. K. Medda**, M. Mitra and G. De in the 20th Annual General Meeting, Materials Research Society of India (MRSI), held at Kolkata during February 8-10, **2009**.
- (iv) "Antireflective (AR) coatings on plastic lenses and sheets using inorganic-organic hybrid nanocomposite sols" by S. De, **S. K. Medda** and G. De in the international conference on 'Nanoscience and Technology' (ICONSAT-2008) held at Chennai, Tamil Nadu, India, during February 27-29, **2008**.
- (iii) "Development of a technology 'Anti-scratch coatings on plastic ophthalmic lenses and sheets' using inorganic-organic hybrid nanocomposites and its commercialization" by **S. K. Medda** and G. De in the international conference on 'Nanoscience and Technology' (ICONSAT-2008) held at Chennai, Tamil Nadu, India, during February 27-29, **2008**.
- (ii) "Inorganic-organic hybrid nanocomposite coatings for technological applications" by Goutam. De, **S. K. Medda**, S. De and S. Pal in the international conference on 'Leveraging Innovations & Inventions' held during October 15-16, **2007**, New Delhi.
- (i) "Au-nanoparticle incorporated SiO₂-ZrO₂ films: tuning of Au-plasmon absorption position" by **S. De**, G. De, and **S. K. Medda** (poster presented by Sucheta De) in the 17th Annual General Meeting, Theme Symposium: Bio, Biomedical & Natural Materials, held on February 13-15, **2006** organized by MRSI-Lucknow Chapter & University of Lucknow.