

Curriculum Vitae

Dr. K. S. ANURATHA

Chinese name: 阿努拉莎

Email: anuratha124@gmail.com

Mobile: +886 984287696



Present Address:

**No.2, 2nd floor, Zhengfu street, Taoyuan district, Taoyuan city, Taiwan
Pin code: 330**

Date of birth: April 12th, 1989 (78/04/12)

Female, Indian, Married.

Research Interests

- ❖ **Dye-sensitized solar cells**
- ❖ **Perovskite solar cells**
- ❖ **Transparent conducting oxides**
- ❖ **Nanomaterial synthesis and its application**
- ❖ **Electrochemistry (Electrochemical deposition of metals and its compounds)**
- ❖ **Supercapacitors and Battery Applications**

Academic Qualifications

Sep 2021-
current position **Post-doctoral fellow, Tunghai University, Taichung, Taiwan.**
**Research Advisor: [Prof. Jeng-Yu Lin](#), Department of Chemical and
Materials Engineering, Tunghai University, Taichung, Taiwan.**

Research Activities

- ❖ **Development of Transition metal dichalcogenides (TMDCs) and their composites with carbonaceous materials for energy storage and conversion applications.**

March 2021-
August 2021 **Post doctoral fellow, Tatung University, Taipei, Taiwan.**
**Research Advisor: [Prof. Jeng-Yu Lin](#), Department of Chemical
Engineering, Tatung University, Taipei, Taiwan.**

Research Activities

- ❖ **Development of Transition metal dichalcogenides (TMDCs) and their composites with carbonaceous materials for energy storage and conversion applications.**

June 2017-
May 2018 **Visiting Researcher**
**Worked with [Prof. Jeng -Yu Lin](#), Department of Chemical
Engineering, Tatung University, Taipei 104, Taiwan (R.O.C.)**

Research Activities:

- **Synthesis of Counter electrode materials for Dye-Sensitized Solar Cell applications and modification of blocking and porous layer by electrochemical deposition for Perovskite Solar Cells.**
- **Development of Graphene based hybrid materials for Energy storage (Supercapacitors) Applications.**

Jan 2015-
April 2017 **Ph.D in Chemistry**
**Working Place: CSIR-Central Electrochemical Research Institute (CECRI),
Karaikudi, India. Registered under Bharathidasan University,
Tiruchirappalli, India.**

Ph.D Supervisor: Dr. S. Mohan, Chief Scientist, CSIR-CECRI, Karaikudi, India.

Ph.D Thesis Title: Photoanode and Counter electrode modifications for the improved Performance of Dye-sensitized solar cells.

Research Activities: Design and development of transition metal compounds (NiS, NiSe) and their hybrid materials with carbon allotropes (graphene, CNT) for counter electrode application of Dye-sensitized solar cells.

Ph.D degree conferred on 23rd October 2018

**August 2012-
Dec 2014**

Project Assistant in CSIR-CECRI, Karaikudi, India.

Project supervisor: Dr. N Lakshminarasimhan, Scientist, CSIR-CECRI, Karaikudi, India.

Project Title: Dye Sensitized and Quantum Dot Sensitized Solar Cells

Research Activities: Fabrication of various semiconductor photoanode materials for Dye Sensitized and Quantum Dot Sensitized Solar cells and analyzing the photoanode/electrolyte interface.

Other Research experience: One year Research experience in the field of Magnetostriction. Electrodeposition of Fe-Ga alloy thin films on Cu substrate and their magnetostrictive properties are characterized.

List of publications

1. Free-standing 3D core-shell architecture of Ni₃S₂@NiCoP as an efficient cathode material for hybrid supercapacitors, **Krishnan Shanmugam Anuratha**, Ying-Zhou, Po-Jen Wang, Panitat Hasin, Jihuai Wu, Chien-Kuo Hsieh, Jeng-Kuei Chang, Jeng-Yu Lin, **Journal of Colloid and Interface Science** 625 (2022) 565–575.
2. Co-solvent modified methylsulfonylmethane-based hybrid deep eutectic solvent electrolytes for high-voltage symmetric supercapacitors, Ming-Kuen Huang, **Krishnan Shanmugam Anuratha**, Yaoming Xiao, Yen-Pei Chen, JengYu Lin, **Electrochimica Acta** 424 (2022) 140612

3. Highly hydrophilic electrodeposited NiS/Ni₃S₂ interlaced nanosheets with surface-enriched Ni³⁺ sites as binder-free flexible cathodes for high-rate hybrid supercapacitors Yu-Kai Hsu, Aniruddha Mondal, Ying-Zhou, Zdenek Sofer, **Krishnan Shanmugam Anuratha**, Jeng-Yu Lin, *Applied Surface Science* 579 (2022) 151923
4. High-performance hybrid supercapacitors based on electrodeposited amorphous bimetallic nickel cobalt phosphide nanosheets, **Krishnan Shanmugam Anuratha**, Ying-Zhou Sub, Min-Kung Huang, Chien-Kuo Hsieh, Yaoming Xiao, Jeng-Yu Lin, *Journal of Alloys and Compounds* 897 (2022) 163031
5. Potential-reversal electrodeposited MoS₂ thin film as an efficient electrocatalytic material for bifacial dye-sensitized solar cells C-Y Chang, **K S Anuratha**, Y-H Lin, Y Xiao, P Hasin, J-Y Lin *Solar energy* 2020, 206, 163.

[10.1016/j.solener.2020.06.001](https://doi.org/10.1016/j.solener.2020.06.001)

Impact factor: 4.6 Citation: 1

6. Graphitic nanofibres decorated with Ni₃S₂ interlaced nanosheets as efficient binder-free cathodes for hybrid supercapacitors **K S Anuratha**, YH Tsai, SY Lin, IC Chen, Z Sofer, CK Hsieh, J-Y Lin *Applied Surface Science* 2019, 505, 143828.

doi.org/10.1016/j.apsusc.2019.143828

Impact factor: 6.1 Citation: NA

7. Laser printer patterned sacrificed layer for arbitrary design and scalable fabrication of the all-solid-state interdigitated in-planar hydrous ruthenium oxide flexible micro supercapacitors. Kai-Chen Huang, Che-Hsien Lin, **Anuratha K.S**, Tsung-Yu Huang, JengYu Lin, Fan-Gang Tseng, Chien-Kuo Hsieh, *Journal of Power Sources*, 2019, 417, 108

doi.org/10.1016/j.jpowsour.2019.02.016 Impact factor: 6.9 Citation: NA

8. Electrodeposition of nanostructured TiO₂ thin film as an efficient bifunctional layer for perovskite solar cells. **Krishnan Shanmugam Anuratha**, Hsiao-Shan Peng, Yaoming Xiao, Tzu-Sen Su Tzu-Chien Wei, Jeng-Yu Lin, *Electrochimica Acta*, 2019, 295, 662

<https://doi.org/10.1016/j.electacta.2018.10.181>. Impact factor: 5.1 Citation: NA

9. Electrochemical formation of TiO₂ porous layer fo perovskite solar cells. **Krishnan Shanmugam Anuratha**, Hsiao-Shan Peng, Chien-Kuo Hsieh, Yaoming Xiao, Jeng-Yu Lin, *Thin Solid films* 2018, 660, 720

doi.org/10.1016/j.tsf.2018.03.088. Impact factor: 1.93 Citation: 1

10. Low temperature growth of carbon nanotubes using chemical bath deposited Ni(OH)₂ – An efficient Pt-free counter electrodes for dye-sensitized solar cells. Tzu- Kuan Chuang, Anuratha K.S, Jeng-Yu Lin, Kai-Chen Huang, Chia-Hung Su, Chien-Kuo Hsieh, *Surface and Coatings Technology*, 2018, 344, 534

doi.org/10.1016/j.surfcoat.2018.03.079. Impact factor: 2.9 Citation: NA

11. Nebulizer Spray-deposited CuInGaS thin films, a viable candidate for counter electrode in dye-sensitized solar cells, C. Ravidhas, A. J. Christy, R. Venkatesh, K. S. Anuratha, K. Ravichandran, A. Raj, B. Subramanian, S. K. Panda, *Solar Energy*, 2017, 157, 58

doi.org/10.1016/j.solener.2017.08.013). Impact factor: 4.8 Citation: 4

12. Studies on synergetic effect of rGO-NiCo₂S₄ nanocomposite as an effective counter electrode materials for DSSC K. S. Anuratha, M. Ramaprakash, Subhendu K. Panda and S. Mohan *Ceramics International*, 2017, 43, 10174

doi.org/10.1016/j.ceramint.2017.05.042). Impact factor: 3.0 Citation: 4

13. Pulse reverse electrodeposited NiCo₂S₄ nanostructures as efficient counter electrodes sensitized solar cells K. S. Anuratha, Subramanian Mohan and Subhendu K. Panda *New journal of chemistry*, 2016, 40, 1785

doi.org/10.1039/c5nj02565f). Impact factor: 3.2 Citation: 15

14. Enhanced dye-sensitized solar cell performance using TiO₂: Nb blocking layer deposited by soft chemical method, S. Parthiban, K.S. Anuratha, S. Arunprabakaran, S. Abinesh, N. Lakshminarasimhan, *Ceramics International* 2015, 41, 205

doi.org/10.1016/j.ceramint.2014.08.059) Impact factor: 3.0 Citation: 7

15. Role of synthesis medium of TiO₂ nanoparticles in enhancing the open-circuit voltage and efficiency in dye-sensitized solar cell, K. S. Anuratha, N. Lakshminarasimhan, *Journal of Solid State Electrochemistry* 2014,18, 3407

doi.org/10.1007/s10008-014-2565-1). Impact factor: 2.5 Citation: 5

List of Book Chapters

1. **Carbon Nanotube Electrocatalysts for I-Mediated Dye-Sensitized Solar Cells.** K.S. Anuratha and J-Y. Lin in **Counter Electrodes for Dye-sensitized and Perovskite Solar Cells, II** Online ISBN:9783527813636, Wiley-VCH Verlag GmbH & Co. KGaA, 2018, pp 93-121.

<https://onlinelibrary.wiley.com/doi/book/10.1002/9783527813636>

Papers presented at conferences

1. Participated in **National Convention of Electrochemists-19 (NCE-19)** held at NIT-Trichy on March 28-29, 2016 and presented the poster which is entitled as **Nanocomposites of rGO/NiCo₂S₄-Effective Counter Electrode materials for DSSC** K S Anuratha, Subhendu K Panda and S Mohan.

2. Participated in **Materials for Energy conversion and Storage -2016(MECS)** held at Pondicherry University on March 11-13, 2016 and presented a poster and the title of the poster is **Pulse reverse electrodeposited NiCo₂S₄ nanostructures as efficient counter electrodes for dye-sensitized solar cells** K S Anuratha, Subhendu K Panda and S Mohan.

3. Participated and got best poster award in **2nd TAPSUN Conference** held at Chennai on Sep 2013 and the title of the poster is **Role of synthesis conditions of TiO₂ nanoparticles and TiO₂ based blocking layer in enhancing the DSSC performance,** K. S. Anuratha, S. Parthiban, S. Arunprabakaran, S. Abinesh and N. Lakshminarasimhan.

4. Participated and presented the Poster which is entitled **Zn-doped TiO₂ Nanoparticles for Dye Sensitized Solar Cell Applications** K. S. Anuratha, N. Lakshminarasimhan in **iSAEST-10** held at Chennai on Jan 28-30, 2013.

5. Participated in **ECS-India School on Physical Electrochemical Principles of Electroanalytical Chemistry** held at Pondicherry University on Jan 7-11, 2013.

6. Participated in the workshop on **FRONTIERS IN BIOINORGANIC CHEMISTRY** held at Bharathidasan University, Tiruchirappalli during February 25-27, 2010.

Education and Training

COURSE	YEAR	INSTITUTION	BOARD/ UNIVERSITY	Marks (%)
Master of Philosophy in Chemistry	2011-2012	Madurai Kamaraj University, Madurai, India	Madurai Kamaraj University	83.92
Master of science in Chemistry	2009-2011	Bharathidasan University, Trichy	Bharathidasan University	69.93
Bachelor of Science in Chemistry	2006-2009	Alagappa Govt. Arts College, Karaikudi	Alagappa University	87.00
Higher Secondary Course (HSC)	2004-2006	Chidambaram Chettiar Girls Higher Secondary School, Kottaiyur	State Board	85.30
Secondary School Leaving Course (SSLC)	2004	St. Francis Higher Secondary School, C. K. Mangalam	State Board	94.60

M.Sc., (Master of Science) Project Title

Synthesis, characterization and electrochemical properties of arene ruthenium complexes containing thioamide ligands (Supervisor: Dr. R. Ramesh, School of Chemistry, Bharathidasan University, Tiruchirappalli)

M.Phil., (Master of philosophy) Project Title

Green Synthesis of Ag nanoparticles and Sensor Applications (Supervisor: Dr. Gnanakumar, School of Chemistry, Madurai Kamaraj University, Madurai)

Merits and Awards

1. Secured **University 2nd rank in B.Sc., Chemistry** at Alagappa University, Karaikudi.
2. Obtained **Best poster award** in 2nd TAPSUN Conference held at Chennai on Sep 2013.
3. Qualified **GATE-2014** (All India Graduate Aptitude Test in Engineering). Registration Number: CY709901073 and GATE score is 312 in the subject of chemistry.
4. Qualified **SET-2016** (State Eligibility Test for Lectureship) in the subject of chemistry. (Registration Number: 1102115)
5. Participated in **SUMMER TRAINING PROGRAMME** held at Department of Inorganic Chemistry, Guindy campus, Madras University, Chennai during May-June, 2010.
6. Participated on **National Service Scheme (NSS)** camp for 10 days during 2009 to clean the village area.

Personal Skills

Languages Known

Tamil, English

Job-Related Skills

Hard working to achieve the goals

Preparation of Manuscript, Review reports and Book Chapters

Presentation of Research Results and good teaching ability

Software Proficiency

Experienced in Origin, Chem Draw, Microsoft Office, Z-View, X'Pert high score plus, XPS peak fit, ImageJ./

Instruments Operated

XRD, XRF, FT-IR, UV-Vis Spectrometer SEM and Solar Simulator

References

Dr. S. Mohan
Chief Scientist
EMFT Division
CSIR-CECRI
Karaikudi, India

E-mail: mohan40159@gmail.com
Phone: + 919442126765

Prof. Jeng-Yu Lin
Professor,
Department of Chemical
and Materials Engineering,
Tunghai University

Taichung, Taiwan
E-mail: jylin@ttu.edu.tw

Dr. Chien-Kuo Hsieh
Professor
Department of Materials
Engineering,
Ming-Chi University of
Technology
Taipei, Taiwan
E-mail:

jack_hsieh@mail.mcut.edu.tw

Hereby I declare that the information furnished above is true to the best of my knowledge.

Date: 2021.09.30

Place: Taichung, Taiwan

K. S. Anuratha

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