



CURRICULUM VITAE

Dr. Shanmugasundaram Sakthivel

Designation:

Scientist F& Team Leader

Department:

Centre for Solar Energy Materials

Institution:

International Advanced Research centre for powder Metallurgy and new materials (ARCI)

Address:

RCI Road, Balapur (PO) Hyderabad-500 005, Telangana State, India

Education:

PhD (Heterogeneous Catalysis), MSc (Applied Chemistry), BSc (General Chemistry)

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Research Interests:

- **Material Chemistry:** Solar absorber, nanostructure and porous & non porous materials
- **Photo catalysis:** UV/Visible light active photo catalysts (by metal/non metal incorporation), C-TiO₂ core-shell materials and mechanistic investigations.
- **Functional coatings:** Selective absorber/Antireflective/Superhydrophobic/Self-clean coatings for PV and Solar thermal Applications.
- **Smart materials:** Carbon nano /cluster/flake/layered materials for thermal and Electrical storage

Academic background:

- **B.Sc.** in **General Chemistry**, Bharathidhasan University, Trichy, (June1988 - May 1991)
- **M.Sc.** in Applied Chemistry, Anna University, Chennai (June 1991- May 1993)
- **Ph.D** in Heterogeneous Photocatalysis, Department of Chemistry, Anna University, Chennai (Jan 1995- May 1999) & Technical university of Clausthal, Germany under DAAD Fellowship (May 1999 – Sep 2001)

Professional Experience:

Research: 23 years

Present Designation: Scientist F, Team Leader of Centre for Solar Energy Materials (Dec 2015-present)

Present research:

- ✚ Synthesis of solar absorber, nanostructure, porous and non porous materials for Selective absorber tube development for Concentrated Solar thermal application
- ✚ Synthesis of nanoparticles (TiO₂, SiO₂, MgF₂, CaF₂, Ag-TiO₂, C-TiO₂) for the development of functional coatings (Antireflective, Self-clean and easy to clean coatings)
- ✚ Development of smart materials (Carbon nano cluster/flake/layered) for thermal and electrical storage.
- ✚ Team management of PV and Solar thermal groups in the centre

1. **Previous Designation: Scientist E (July 2010- Nov 2015)**

Research engaged:

- ✚ Synthesis of solar absorber, nanostructure, porous and non porous materials for Selective absorber tube development for Concentrated Solar thermal application
- ✚ Synthesis of nanoparticles for the development of functional coatings
- ✚ Synthesis of visible light active photo catalysts for indoor self clean application

2. **Previous Designation: Senior Scientist (Oct 2009- June 2010)**

Research engaged:

- ✚ Synthesis of nano and microstructure materials for functional coatings for PV and Solar thermal applications.

1. **Previous Job: Research Scientist (Dec 2006- June 2009)**

INM Leibniz-Institute for New Materials research, Saarbrücken, Germany

Research engaged:

- ✚ *Nanomaterials synthesis and functional coatings development for optical, solar and photo catalytic self-clean applications*

2. **Previous Job: Postdoctoral Researcher (Nov 2001- May 2006)**

Friedrich-Alexander-Universität, Erlangen-Nürnberg, Germany

Research engaged:

- ✚ *Visible light photocatalysts for indoor self-clean application*

1. **Research Fellow: DAAD Research Fellow - extension period (Oct 2000- Sep 2001)**

Institut für Thermische Verfahrenstechnik der Technischen Universität Clausthal, Clausthal-Zellerfeld, Germany

Research engaged:

- ✚ *Synthesis of novel TiO₂ photocatalysts and films for UV photocatalytic application*

2. **Research Fellow: DAAD Research Fellow (Oct 2000- Sep 2001)**

Host Institution: Hameln/Emmerthal (ISFH), Aussenstelle Hannover, Germany

Research engaged:

✚ *Synthesis of Hetero junction materials for photo catalytic application*

3. Research Fellow: Research cum Project fellow (*Jan1995-May 1999*)

Parent Institution: Department of Chemistry, **Anna University, Chennai, India**

Research engaged:

✚ *Synthesis of Nobel metal and non-metalized TiO₂ and ZnO & supported photocatalysts for UV photocatalytic application*

Research Associate (1995-1996): Research associate in a project funded by The Netherlands Organization (TNO), Environmental Technology Lab, Central Leather Research Institute (CLRI), Chennai, India

Description of duties: Monitoring & Analysis

✚ Performance monitoring of Up-flow anaerobic sludge blanket (UFASB) waste water treatment plant & analysis of waste water.

Affiliations Professional Societies:

- Member of International Solar Energy Society (ISES)
- Member of International Material Research Society (IMRS)
- Member of Material Research Society, India (MRSI)
- Member of Administrative staff college of India (ASCI), Hyderabad, India

Honors and Awards:

- **DAAD research award (June1999)**, German Academic Exchange Service, Bonn, Germany
- **Brain-fellowship award (Oct. 2006)**, Korean Science and Technology, Korea
- **Bharath Jyoti Award (2015)**, India International Friendship Society, New Delhi, India
- **Glory of India Gold Medal (2015)**, International Institute of Success Awareness, New Delhi, India
- **Mother Theresa Excellence Award (2017)**, India International Friendship Society New Delhi, India
- **Albert Nelson Marquis Lifetime Achievement Award (2018)**, Marquis Who's who, Berkeley Heights, US
- **Member of the Royal Society of Chemistry (MRSC), Cambridge, UK**

Major Research Grants:

1. Cost efficient absorber materials and selective absorber coatings development for the design of cost effective parabolic trough solar collector for ORC systems: DST-DOE Indo-US Science & Technology Forum, (SERIUS) (IUSSTF/JCERDS-SE/2012): INR: **2.92 Crore** (Nov 2012 – March 2018).
2. Design and Development of Cost-efficient Solar Receiver Tube for Medium and High Temperature Solar Thermal Applications (DST-SERI programme (DST/TM/SERI/DSS/345(G)&(C), Date:22/12/2015), INR: **2.96 Crore** (Dec 2015 – ongoing).
3. Development of Super-Hydrophobic Coatings with High Transmittance and Weather Stability for Dust Cleaning of PV Panels (NTPC/NETRA/SHC/2016), INR: **55.8 Lakh** (June 2016 – ongoing)
4. High temperature stable nanocomposite solar absorber coatings for CSP applications- Technology Research centre project –received from DST, Govt. of India (AI/I/65/ARCJ12014 -A6), INR: **1.42 Crore** (Jan 2016 – ongoing).
5. Development of highly transparent dust repellent coatings for PV panels and Al reflector plates - Technology Research centre project –received from DST, Govt. of India (AI/I/65/ARCJ12014 -A7), INR: **56 Lakh** (Jan 2016 – ongoing).

6. Broadband antireflective coatings for CSP and PV applications - Technology Research centre project – received from DST, Govt. of India (AI/I/65/ARCI/2014 –B4), INR: **70 Lakh** (Jan 2016 – ongoing).
7. Joint Development of solar selective coatings for Parabolic Trough Design in Concentrated Solar Thermal Power Plants (Themax Ltd, Pune, India), INR: **17 Lakh** (Aug 2011-Dec. 2014).
8. Atmospheric processing of large-area perovskite solar cell with >10% efficiency and demonstration of industry viable method for high throughput production of PSC modules, (DST-CERI programme), INR: **40 Lakh** (June 2016 – ongoing).

Professional Activities

1. Member in the Assessment committee of Scientist Recruitment & Assessment (CSIR), 2019.
2. Member in the advisory committee of CO₂ Research & Green Technology Centre, VIT University, Vellore, India (2018- present).
3. Member in the advisory committee of International conference on Advanced Materials Chemistry at the interfaces of Energy, Environment and Medicine (ACMI2019), March 18 – 20, 2019, Manonmanium Sundaranar University, Tirunelveli, India.
4. Member in the advisory committee of International conference on Advances in Renewable Energy and Green Technology Materials Chemistry at the interfaces of Energy, Environment and Medicine (ACMI2019), 30 – 31 Jan 2019, VIT University, Vellore, India.
5. Member in the advisory committee of National conference on Novel Chemical Systems for Therapeutic and Energy Applications (NCSTEA-2019), 1–2 March 2019 at Sardar Patel University, Gujarat, India.
6. Member in the Procurement committee (2016 – present)
7. Professional member in the Marquis Who's Who in the World and Science & Engg.
8. Guest Editor for a special issue on “Photocatalysis for the Environment and Energy” for the International journal of Photo energy.

Project and Research students supervised:

Ph.D student (on-going): 3
Senior Research Fellow: 2
Junior Research Fellow: 2
Graduate Student Project thesis: 10
Under Graduate Project Thesis: 15
Post graduate trainee (completed): 5
Graduate trainees (completed): 6

Research credits:

Technology developed: **15**
 Technology Transferred: **3**
 Publications: **48**
 Patents: **30 (13 Ind. Patents +10 other countries+ 3 US + 2 WO+ 2 European)**
 Total citations: **8141+**
 H index factor: **23**
 I10 index: **26**
 Invited Speaker in International and National Conferences: **26**
 Paper presented International and National Conferences: **58**

Participated management programme:

1. *Strategic R&D management*, Administrative Staff College of India (ASCI), Hyderabad, December 12-14, 2016.
2. *Leadership Excellence through Effective Communication*, ARCI, Hyderabad, March 20-21, 2017.
3. *Accelerating Innovation & Entrepreneurship by Managing IP Creation*, Confederation of Indian Industry, ITC Kakatiya, Hyderabad, 31st Oct 2018.
4. *Management Development programme on Building and Leading Teams*, IIM, Indore, December 2-5, 2018.

LIST OF PATENTS

1. S. Sakthivel, A. Srinivas Rao and M. Shiva Prasad, "Transition metal-based solar selective absorber coated substrate and method of manufacturing the same", [Indian patent Application no. 201911019139](#), date of filling: 14.05.2019.
2. S. Sakthivel, R. Easwaramoorthi, C. Narendra, A. Srinivas Rao, "Ambient condition curable transparent Superhydrophobic coating for easy to clean applications and method of producing the same", [Indian patent Application no. 201911009429](#), date of filling: 11.03.2019.
3. S. Sakthivel, S. Anandan and T. N. Rao, "Method of producing nano structured C-TiO₂ composite materials for visible light self cleaning" [Indian patent application no. 201811011478](#), 28th March 2018.
4. S. Sakthivel and K. Chandra Sekhar Reddy, "Method of producing Hollow MgF₂ nanoparticles, anti-reflection coating sols and coatings for optical and solar applications", [Indian patent application no. 201611041804](#), 7th Dec, 2016.
5. S. Sakthivel, M. Shiva Prasad and S.V. Joshi, "Solar selective coating for solar energy collector /absorber tube with improved performance and a method of producing the same" [Indian patent application no. 2142/DEL/2015](#), date of filling: 15.07.2015.
6. S. Sakthivel, M. Shiva Prasad, B. Mallikarjun and S.V. Joshi, "An improved performance of Nanocomposite Oxide Selective Absorber Coating with excellent optical and thermal resistant properties and method of manufacturing the same" [Indian patent application no. 1111/DEL/2015](#), date of filling: 22.04.15.
7. S. Sakthivel, D. Karthik, and S.V. Joshi, "Method of producing porous MgF₂ nanoparticles, anti-reflection coating suspension and coatings for solar, optical, UV and IR transparent window applications" [Indian patent Application no. 4041/DEL/2014](#), date of filling: 31.12.14.
8. S. Sakthivel, S. Viswanathan and S.V. Joshi "Process of producing easy to clean coating (Super-hydrophobic coating) with high optical, weather, UV and corrosion resistance properties" [Indian patent application no. 402/DEL/2014](#), date of filling: 13.02.2014.
9. S. Sakthivel, Sherine Alex and S.V. Joshi "Process for producing anti-reflective coatings with anti-fogging (super hydrophilic), UV, weather and scratch resistance properties" [Indian patent application no. 2919/DEL/2013](#), date of filling: 3.10.2013.
10. S. Sakthivel, V. Premkumar and A. Srinivas Rao "An improved solar selective absorber coating with excellent optical absorptance, low thermal emissivity and excellent corrosion resistance property and a process of producing the same" [Indian patent application no. 1129/DEL/2013](#), date of filling: 16.04.2013.
11. S. Sakthivel and A. Srinivas Rao "A high thermal stable selective solar absorber layer with low emissive barrier coating over a substrate and a process of producing the same" [Indian patent application no. 3312/DEL/2012](#), date of filling: 29/10/2012.
12. S. Sakthivel, M. Righeira Carnegie and S.V. Joshi "Process for producing anti-reflective coatings with scratch resistance property" [Indian patent application no. 1777/DEL/2012](#), date of filling: 11/06/2012.
13. J. Orth-Gerber, H. Kisch, and S. Sakthivel, "Kohlenstoffhaltiger Titandioxid-Photokatalystor und Verfahren zu seiner Herstellung" [German Pat. Appl. Publ. \(2004\) DE 102004 027549 A1](#).
14. H. Kisch and S. Sakthivel, "Photokatalytisches Gelbpigment" German Offen (2006), [DE 10 2006 049 769A1](#).
15. M. Veith, O. Peter, M. Jilavi and S. Sakthivel "Method for Producing Coatings Having Anti-Reflection Properties" [US2012/0125234 A1](#)
16. M. Veith, O. Peter, M. Jilavi and S. Sakthivel "Verfahren zur Herstellung von Beschichtungen mit Antireflexionseigenschaften" (2011), [DE 10 2009 035 797.1](#)
17. M. Veith, O. Peter, M. Jilavi and S. Sakthivel "Method for producing coatings having antireflection properties" (2011), [WO 2011/012214A1](#).
18. M. Veith, O. Peter, M. Jilavi and S. Sakthivel "Method for producing coatings having antireflection properties" (2012), [EP 2460035](#).
19. J. Orth-Gerber, H. Kisch, and S. Sakthivel 'Carbon-containing, "Titanium dioxide –based photocatalyst, and process for producing the same" (2005) [EP000001732992A1](#).
20. J. Orth-Gerber, H. Kisch, and S. Sakthivel 'Carbon-containing, "Titanium dioxide –based photocatalyst, and process for producing the same" [WO 2005/108505 A1](#).
21. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Titanium dioxide photocatalyst containing carbon and method for its production" [U.S. Pat. Appl. Publ. \(2005\), US 2005227854 A1](#).
22. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Titanium dioxide photocatalyst containing carbon and method for its production" [U.S. Pat. Appl. Publ. \(2005\), US 2005226761 A1](#).

23. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Carbon containing titanium dioxide, process for producing and use thereof as a photocatalyst" (1010) UA90270 (TG 178 WO/UA).
24. J. Orth-Gerber, H. Kisch, and S. Sakthivel " A carbon containing photocatalyst based on titanium dioxide, A process for producing the same and use thereof (variants)' (2010), RUSSIA 2006139088.
25. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Photocatalysis of titanium dioxide containing carbon and process for its manufacture"(2007) Portugal BR000PI0509767A.
26. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Carbon-containing, Titanium dioxide –based photocatalyst, and process for producing the same" (2007) Korea, Kr102007039872AA.
27. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Carbon-containing, Titanium dioxide –based photocatalyst, and process for producing the same" (2007) China, CN 1930250 A (TG 178 WO/CN).
28. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Carbon-containing, Titanium dioxide –based photocatalyst, and process for producing the same" (2007) India 1031/MUMNP/2006 A.
29. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Carbon-containing, Titanium dioxide –based photocatalyst, and process for producing the same" (2006) Taiwan 94110845.
30. J. Orth-Gerber, H. Kisch, and S. Sakthivel "Carbon-containing, Titanium dioxide –based photocatalyst, and process for producing the same" Malaysia PI 20051533.

LIST OF PUBLICATIONS

1. S.R. Atchuta, S. Sakthivel and H.C Barshilia, Nickel doped cobalite spinel as a solar selective absorber coating for efficient photothermal conversion with a low thermal radiative loss at high operating temperatures, *Solar Energy Materials and Solar Cells* (in press).
2. S.R. Atchuta, S. Sakthivel and H.C Barshilia, Transition metal based $Cu_xNi_yCo_z-x-yO_4$ spinel composite solar selective absorber coatings for concentrated solar thermal applications, *Solar Energy Materials and Solar Cells*, 189 (2019) 226-232.
3. M. Shiva Prasad, B. Mallikarjun, M. Ramakrishna, J. Joarder, B. Sobha and S. Sakthivel, Zirconia Nanoparticles Embedded Spinel Selective Absorber Coating for High Performance in Open Atmospheric Condition, *Solar Energy Materials and Solar Cells* 174 (2018) 423–432.
4. S. Pendse, K. Chandra Sekhar Reddy, D. Karthik, C. Narendra, K. Murugan and S. Sakthivel, Dual-Functional Broadband Antireflective and Hydrophobic Films for Solar and Optical Applications, *Solar Energy*, 163 (2018) 425–433.
5. Chandra Sekhar Reddy, D. Karthik, D. Bhanupriya, K. Ganesh, M. Ramakrishna, S. Sakthivel, Broad band antireflective coatings using novel in-situ synthesis of hollow MgF_2 nanoparticles, *Solar Energy Materials and Solar Cells* 176 (2018) 259–265.
6. M. Shiva Prasad, K.K. Phani Kumar, S.R. Atchuta, B. Sobha, S. Sakthivel, High performance and thermally stable tandem solar selective absorber coating for concentrated solar thermal power (CSP) application, AIP Conference Proceedings, 1961, (2018), 020004-1-7.
7. M.S. Prasad, S.R. Atchuta and S Sakthivel, "Nanomaterials and Coatings for Concentrated Solar Thermal Power (CSP) and Photovoltaic (PV) Application" *Advanced Materials Chemistry at the Interfaces of Energy, Environment and Medicine*. Vol 1, p 53-57, ISBN: 978-93-81402-42-9, 2018.
8. M. Shiva Prasad, S R Atchuta and S. Sakthivel, Nanomaterials and Coatings for Concentrated Solar Thermal Power (CSP) and Photovoltaic (PV) Application, *Advanced Materials Chemistry at the Interfaces of Energy, Environment and Medicine*. 1 (2018) 53-57.
9. V. Manjunath, Ramya Krishna, S. Maniarasu, E. Ramasamy, S. Sakthivel, V. Ganapathy, "Perovskite Solar Cell Architectures" *Perovskite Photovoltaics-basic to advanced concepts and implementation*. ISBN No.: 9780128129159, Elsevier (2018).
10. D. Karthik, S. Sakthivel, R. Easwaramoorthi and S.V. Joshi, High performance broadband antireflective coatings using a facile synthesis of ink-bottle mesoporous MgF_2 nanoparticles for solar applications, *Solar Energy Materials & Solar Cells* 159 (2017) 204–211.
11. S R Atchuta, B. Mallikarjun, and S. Sakthivel, Optically enhanced solar selective and thermally stable absorber coating for concentrated solar thermal application, 6th International Conference on Advances in Energy Research ICAER-2017, Springer Proceedings in Energy (accepted).
12. M. Shiva Prasad, K. Chandra Sekhar Reddy, S. Sakthivel, Development of cost efficient solar receiver tube with a novel tandem absorber system, *Applied Thermal Engineering* 109 (2016) 988-996.
13. S. Sakthivel, M. Karthik, T.N. Rao, Nanotechnology for concentrated solar thermal application, *Nano insight*, 7 (2016) 42-52.
14. S. Sakthivel, B.V. Sarada, T.N. Rao, concentrated solar thermal application from Nano, *Nano digest*, (2016) 42-46.

15. M. Righeira Carnegie, A. Sherine, D. Sivagami, S. Sakthivel, Anti-reflection coatings with enhanced abrasion and scratch resistance properties, *Sol-Gel Science and Technology* 78 (2016) 176-186.
16. T. Vijayaraghavan, M. Shiva Prasad, S. Sakthivel and S.V. Joshi, Design and fabrication of highly environmental stable Cr-Fe-Ni oxides/ ZrO₂-SiO₂ composite oxide based tandem absorber for solar thermal power generation applications, *Solar world congress proceedings 2015, Daegu, S. Korea, Nov. 08-12, 2015.*
17. A. Srinivasa Rao, S. Sakthivel, A highly thermally stable Mn–Cu–Fe composite oxide based solar selective absorber layer with low thermal loss at high temperature, *Journal of Alloys and Compounds* 644 (2015) 906–915.
18. Subir Roy, R. Maharana, S. Gokul Laxmi, S.Sakthivel, Manish Roy, V.V. Bhanu Prasad and D. K. Das, AlPO₄-C composite coating for high emissivity and oxidation protection Applications, *J. Surface Engg.*, 29 (2013) 360-365.
19. EA Konstantinova, Aleksandr I Kokorin, K Lips, S Sakthivel, H Kisch, EPR study of the illumination effect on properties of paramagnetic centers in nitrogen-doped TiO₂ active in visible light photocatalysis, *Applied Magnetic Resonance* 35 (3), (2009). [Cited 20](#)
20. H Kisch, S Sakthivel, M Janczarek, A Low-Band gap nitrogen-modified titania visible-light photocatalyst, *ACS Publications Journal of Physical Chemistry C* 111(30) (2007) 11445-11449. [Cited 171](#)
21. R Beranek, B Neumann, S Sakthivel, M Janczarek, Exploring the electronic structure of nitrogen-modified TiO₂ photocatalysts through photocurrent and surface photovoltage studies, *Elsevier Chemical Physics* 339(1-3) (2007) 11-19. [Cited 100](#)
22. EA Konstantinova, AI Kokorin, S Sakthivel, H Kisch, K Lips, Carbon-doped titanium dioxide: visible light photocatalysis and EPR investigation, *CHIMIA International Journal for Chemistry* 61(12) (2007), 810-814. [Cited 46](#)
23. C Damm, S Sakthivel, H Kisch, UV and visible light acrylate photopolymerisation initiated by nitrogen-or carbon-doped titanium dioxide, *Zeitschrift für physikalische Chemie* 220 (4) (2006) 477-486. [Cited 9](#)
24. S Sakthivel, MC Hidalgo, DW Bahnemann, S-U Geissen, V Murugesan, A Vogelpohl, A fine route to tune the photocatalytic activity of TiO₂, *Applied Catalysis B: Environmental* 63 (2006) 31-40 [Cited 150](#)
25. P Bogdanoff, H Tributsch, S Sakthivel, Electrochemical mass spectroscopic and surface photovoltage studies of catalytic water photooxidation by undoped and carbon-doped titania, - *The Journal of physical chemistry B* 109(35) (2005) 16579-16586. [Cited 157](#)
26. S. Sakthivel, M Janczarek, H Kisch Visible light activity and photoelectrochemical properties of nitrogen-doped TiO₂ - *The Journal of Physical chemistry* 108 (2004), 19384-19387. [Cited 775](#)
27. MC Hidalgo, S Sakthivel, D Bahnemann, High Photoactive and stable TiO₂ Coatings on sintered glass, *Applied Catalysis A: General*, 277 (2004) 183-189 [Cited 41](#)
28. H Kisch, G Burgeth, W Macyk, S Sakthivel, Modified titania powders for visible light photodetoxification of water, *American chemical society proceeding*, 228 (2004) U542. [Cited 1](#)
29. S Sakthivel, MV Shankar, M Palanichamy, Banumathi Arabindoo, DW Bahnemann, V Murugesan, Enhancement of photocatalytic activity by metal deposition: characterisation and photonic efficiency of Pt, Au and Pd deposited on TiO₂ catalyst, *Water research* 38 (2004) 3001-3008 [Cited 795](#)
30. S Sakthivel, Horst Kisch, Tageslicht Photokatalyse durch Kohlenstoff modifiziertes Titandioxid, *Angewandte Chemie* 115 (2003) 5057-5060 [Cited 110](#)
31. S. Sakthivel, H Kisch, Daylight photocatalysis by carbon-modified titanium dioxide, *Wiley PUBLICATIONS* 4909 *Angew. Chem. Int. Ed.* 42 (2003) 4908–4911. [Cited 2078](#)
32. S Sakthivel, H Kisch, Photocatalytic and photoelectrochemical properties of nitrogen-doped titanium dioxide, *ChemPhysChem* 4 (2003) 487-490 [Cited 557](#)
33. S Sakthivel, B Neppolian, MV Shankar, B Arabindoo, M Palanichamy, V Murugesan, Solar photocatalytic degradation of azo dye: comparison of photocatalytic efficiency of ZnO and TiO₂, *Solar Energy Materials and Solar Cells* 77 (2003) 65-82. [Cited 1365](#)
34. S Sakthivel, MV Shankar, M Palanichamy, B Arabindoo, V Murugesan, Photocatalytic decomposition of leather dye: comparative study of TiO₂ supported on alumina and glass beads, *Journal of Photochemistry and Photobiology A: Chemistry* 148 (2002) 153-159. [Cited 132](#)
35. S Sakthivel, S-U Geissen, DW Bahnemann, V Murugesan, A Vogelpohl, Enhancement of photocatalytic activity by semiconductor heterojunctions: α-Fe₂O₃, WO₃ and CdS deposited on ZnO, *Journal of Photochemistry and Photobiology A: Chemistry* 224 (2002) 283-293 [Cited 224](#)
36. B Neppolian, HC Choi, S Sakthivel, B Arabindoo, V Murugesan, Solar light induced and TiO₂ assisted degradation of textile dye reactive blue 4, *Chemosphere*, 46 (2002) 1173-1181 [Cited 484](#)
37. B Neppolian, HC Choi, S Sakthivel, B Arabindoo, V Murugesan, Solar/UV-induced photocatalytic degradation of three commercial textile dyes, 89 (2002) 303-317 [Cited 553](#)
38. V Murugesan, S Sakthivel, Photocatalytic degradation of leather dyes in aqueous solution using solar/UV illuminated TiO₂/ZnO, *Proceedings of the International Symposium on Environmental Pollution Control and Waste Management (EPCOWM'02)*, (2002) 654-659. [Cited 5](#)

39. S Sakthivel, B Neppolian, M Palanichamy, B Arabindoo, V Murugesan, Photocatalytic degradation of leather dye over ZnO catalyst supported on alumina and glass surfaces, *Water Science and Technology*, 44 (2001) 211-218
[Cited 33](#)
40. B Neppolian, S Sakthivel, B Arabindoo, M Palanichamy, V Murugesan, Kinetics of photocatalytic degradation of reactive yellow 17 dye in aqueous solution using UV irradiation, *Journal of Environmental Science and Health, Part A* 36 (2), 203-213
[Cited 30](#)
41. B Neppolian, S Sakthivel, B Arabindoo, M Palanichamy, V Murugesan, ZnO-photoassisted degradation of textile dye using solar energy, *NISCAIR-CSIR, India* 8 (2001) 36-40
[Cited 15](#)
42. MV Shankar, B Neppolian, S Sakthivel, Banumathi Arabindoo, M Palanichamy, V Murugesan, Kinetics of photocatalytic degradation of textile dye reactive red 2, *NISCAIR-CSIR, India* 8 (2001) 104-109
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43. S Sakthivel, B Neppolian, Banumathi Arabindoo, M Palanichamy, V Murugesan, ZnO/UV mediated photocatalytic degradation of acid green 16, a commonly used leather dye, *NISCAIR-CSIR, India*, 7 (2000) 87-93.
[Cited 23](#)
44. S Sakthivel, B Neppolian, B Arabindoo, M Palanichamy, V Murugesan, TiO₂ Catalysed Photodegradation of Leather Dye, Acid Green 16, *NISCAIR-CSIR, India*, 59 (2000) 556-562
[Cited 50](#)
45. B Neppolian, S Sakthivel, B Arabindoo, M Palanichamy, V Murugesan, Degradation of textile dye by solar light using TiO₂ and ZnO photocatalysts, *Journal of Environmental Science & Health Part A* 34 (9) (1999) 1829-1838.
[Cited 83](#)
46. S Sakthivel, B Neppolian, M Palanichamy, B Arabindoo, V Murugesan, Photocatalytic degradation of leather dye, Acid green 16 using ZnO in the slurry and thin film forms, *NISCAIR-CSIR, India*, 6 (1999) 161-165
[Cited 54](#)
47. B Neppolian, S Sakthivel, B Arabindoo, M Palanichamy, V Murugesan, Photocatalytic degradation of textile dye commonly used in cotton fabrics, *Studies in Surface Science and Catalysis* 113 (1998) 329-335
[Cited 49](#)
48. P. Kannan, S. **Sakthivel**, K.V. Kannan, S.C. Murugavel 'Studies on polyaryl phosphoramidate esters containing phenolphthalein and tetraphenyl methane units' *Proceedings of the International Symposium on macromolecule*, vol. 1, 359, 1995.

LIST OF PAPER PRESENTED IN THE NATIONAL AND INTERNATIONAL CONFERENCES:

58. S. Sakthivel (Invited Lecture) 'Functional coating development from laboratory to industrial scale for Solar Thermal and PV applications', International conference "Advanced Materials Chemistry at the interfaces of Energy, Environment and Medicine (ACMI 2019)" 30 – 31st January 2019, Manonmanium Sundaranar University, Tirunelveli, India.
57. S. Sakthivel (Keynote Lecture) 'Nanostructure Materials Synthesis and Development Nanocoatings for Concentrated Solar Thermal Power (CSP) & PV Applications', 3rd National Workshop on "Solar Energy Utilization (SUN) for Sustainable Development" 1-2nd February, 2018 at CSIR-NEERI, Nagpur, India.
56. S. Sakthivel (Invited Lecture) 'Role of nanofunctional coatings for Solar Thermal and PV applications', for a workshop on "Fabrication of thin –films and Optoelectronics devices through Hands – on – Experience", 3-8th July, 2018 at NIT, Warangal, India.
55. S. Sakthivel (Invited Lecture) 'Role of Nanostructure materials and Coatings for Concentrated Solar Thermal Power (CSP) and Photovoltaic (PV) Applications', "National symposium on Sustainable Energy Conversion and Storage Materials", 5-6th April, 2018 at Sathyabama Institute of Science and Technology, Chennai, India.
54. M. Shiva Prasad, K. K. Phani Kumar, S R Atchuta, B. Sobha and S. Sakthivel. 'High Performance and Thermally Stable Tandem Solar Selective Absorber Coating for Concentrated Solar Thermal Power (CSP) Application', "Nano-materials for Energy Conversion and Storage Applications", 29-31st Jan, 2018 at PDP, Gujarat.
53. S. Sakthivel (Invited Lecture) 'Functional coatings for concentrated solar thermal power (CSP) & PV Applications' at the International workshop on "Challenge and issues in development of distributed solar and wind energy system (ICESD)", 20-24 February, 2017 at Kjei's Trinity college of Engg. and Research, Pune.
52. S. Sakthivel ((Invited Lecture) 'Nanostructure Materials and Nanocoatings for CSP and PV Applications', "3rd National conference on Advanced Oxidation processes (AOP2017)", 18-20 December at BIT campus, Anna University, Trichy, India.
51. S.R. Atchuta, B. Mallikarjun, S. Sakthivel, 'Optically enhanced solar selective and thermally stable absorber coating for concentrated solar thermal application', "6th International Conference on Advances in Energy Research 2017", 12-14th December, 2017 at IIT Bombay, Mumbai.

50. S. Sakthivel (Invited lecture) 'Nanofunctional Materials and Coatings for Concentrated Solar thermal Power (CSP) & PV Applications' at the national workshop on "Solar Energy Utilization for Sustainable Development, held at CSIR-NEERI", 23-24th March, 2017 at Nagpur.
49. S. Sakthivel (Invited lecture) 'Functional materials and coatings for concentrated solar thermal power (CSP) & PV Applications', "International conference On Nanoscience and Nanotechnology 2016", 19-21st October, 2016 at VIT University.
48. M. Shiva Prasad, K. Ganesh and S. Sakthivel, 'Novel Tandem Absorber Coatings for Low and Medium Temperature Concentrated Solar Thermal Power Applications', "First International Conference on coatings, thin films, multilayer devices and systems", 14-16th December 2016 at NFTDC, Hyderabad.
47. S. Sakthivel, 'Role of nanofunctional coatings for PV and Solar thermal application', "International conference on Nanomaterials and Nanotechnology", 7-11th December 2015 at KSRT, Tiruchengode, India.
46. M. Shiva Prasad, S. Amarnath, K. Venkatesh, S. Sakthivel, S.V. Joshi, 'Development of Cost-Efficient Solar Absorber Coatings for ORC Collectors', "SERIUS Review meeting", 13-14th March, 2015 at Hyderabad, India.
45. S. Sakthivel, 'National conference on Emerging trends in chemistry and materials', "Cost Efficient Nanofunctional Coatings for Solar Thermal and PV Applications", 9-10th April 2015 at Thiruvalluvar University, Vellore, India.
44. S. Sakthivel (Invited lecture), 'Importance of solar functional coatings for Solar thermal and PV applications', "National Conference on Recent Advances in Nano sciences (RANSS' 44)", 21-22nd November 2015 at AUXILIUM college, Thiruvalluvar University, Vellore.
43. S. Sakthivel, 'Workshop on chemical coatings on Explosives sponsored by office of principal Scientific Advisor, Dept. of Electronics and Communication', "Novel type of chemical coatings for explosive applications" 21st May 2014 at IIT Bombay.
42. S. Sakthivel (Invited lecture), 'Nano Functional Materials / Coatings for Solar energy harvesting Technologies', "International conference on Chemistry and Materials (ICCM)", 14-15th November 2014 at Dept. of Chemistry, BIT Campus, Anna University, Trichy.
41. S. Sakthivel (Invited lecture), 'Future and Application of Nano functional coatings in Energy Harvesting Technology', "International conference on Nano-Bio and Material sciences (ICONBMS-2014)", 8-10th January 2014 at Osmania University, Hyderabad.
40. S. Sakthivel (Invited lecture), 'Nano functional coatings for solar applications', "International symposium VTU-International CANUES (VICAS-2013)", 18-19th April 2013 at VTU, Belgaum, Karnataka.
39. S. Sakthivel (Invited lecture), 'Important role of functional nano coatings for Solar thermal and PV Applications', "National workshop on Sustainable energy conversion and storage devices", 2-8th September 2013 at SRM University, Chennai, Tamil Nadu.
38. S. Sakthivel (Invited lecture), 'Importance of Solar Energy conversion Technology in India' at a workshop on "Renewable Energy sources", 04-17th October 2013 at Syedammal Engg. College, Ramnad, Tamil Nadu sponsored by AICTE.
37. S. Sakthivel (Invited lecture), 'Importance of Solar Energy conversion Technology' at a workshop on "National seminar on emerging trend in solar Energy 2013", 23 October 2013 at B.S. Abdur Rahman University, Chennai.
36. S. Sakthivel (Invited lecture), 'Important role of functional nano coatings for Solar conversion Technology' at a National work shop on "Nanotechnology – A fuel for chemical Industry", 20-21st September 2013 at RVR & Jc college of Engineering, Guntur, India.
35. S. Sakthivel (Invited lecture), 'Role of nanotechnology in the field of Environment and Energy' at a National seminar on "Role of nanotechnology in Environmental Protection", 11-12th February 2012 at JNTU, Anantapur.
34. S. Sakthivel (Oral presentation), 'Ag-TiO₂ nanocomposite selective solar absorber coatings for solar thermal application' 20-23 January 2012 at ICONSAT-2012, Hyderabad, India.
33. S. Sakthivel (Invited lecture), 'Importance of Solar Energy Conversion Technologies in India & Challenges of producing solar receiver tubes for high temperature Applications', "symposium on New Frontiers in Heterogeneous catalysis", 21 December 2011 at Anna university, Chennai.
32. S. Sakthivel (Invited lecture), 'Development of High absorption and low emissivity coatings for Solar thermal Applications', "National Seminar on Nanotechnology - Its future and Applications in Energy Sector", 26-27th August 2011 at Hyderabad.
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