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Research areas : Photovoltaics, nanomaterials, material characterization

Title of the research : Natural Dye sensitized solar cells. Characterization of Diamonds and Color stone

Research Gate : <https://www.researchgate.net/profile/N-Prabavathy>

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Current position : Deputy Manager, Titan Company Limited (Jewelry Division), Hosur,
Tamil Nadu, India



Description of current and past research:

Current research: Responsible for analysis of spectrometric studies on diamonds and color stones. Technology identification for diamond and color stone quality grading and develop unique methodologies for implementation in building industrial systems. Established and patented a machine vision system for micro gemstone imaging for quality grading. Identification and implementation of analytical methods for diamond quality grading by image processing.

Past research: Efficiency and stability enhancement in natural dye sensitized solar cells. Characterization studies of Photovoltaic devices. Collaboration activities with University of Bergen for the synthesis of Algal based solar cells.

Journal publications:

1. N.Prabavathy, R.Balasundaraprabhu, G.Balaji, S.Prasanna, Dhayalan Velauthapillai, Alum treated TiO₂ nanorods as dye fixative in anthocyanin based dye sensitized solar cells, Materials Research Bulletin, Elsevier, 2020, (UNDER REVIEW)
2. Akesh Kumar, N.Prabavathy, Laxmidhar Biswal, Raman PhotoLuminescence- An efficient way to segregate natural diamonds from Lab grown diamonds, IOP Conference Proceedings, (2021)[Accepted]

3. N.Prabavathy, S. Shalini, R. Balasundaraprabhu, Dhayalan Velauthapillai, S. Prasanna N. Muthukumarasamy, Enhancement in the photostability of natural dyes for dye-sensitized solar cell (DSSC) applications: a review, *Int. J. Energy Res*, 41 (10), 1372-1396, (2017), Wiley Publication, Impact factor : 5.164.
4. S. Shalini, R. Balasundaraprabhu, T. Satish Kumar, N. Prabavathy, S. Senthilarasu, S.Prasanna, Status and outlook of sensitizers/dyes used in dye sensitized solar cells (DSSC): a review, *Int. J. Energy Res*. 40 (10), 1303–1320 (2016), Wiley Publication, Impact Factor: 5.164
5. N.Prabavathy, R.Balasundaraprabhu, Arne S Kristoffersen, G.Balaji, S.Prasanna, K.Sivakumaran, M.D.Kannan, Dhayalan Velauthapillai, Astaxanthin as cosensitizer to enhance the efficiency of anthocyanin based dye sensitized solar cells, *Optik Elsevier*, 2020, Impact factor:2.443
6. N.Prabavathy, R.Balasundaraprabhu, G.Balaji, Asitha Udhayanga, “Investigations on the Ca doped photoelectrodes for natural Dye sensitized solar cells”, *Journal of Photochemistry and Photobiology : A Chemistry*, 377, 43- 57, (2019), Elsevier, Impact factor: 4.291.
7. N.Prabavathy ,S.Shalini, R.Balasundaraprabhu ,Dhayalan Velauthapillai , S. Prasanna, G.Balaji. N. Muthukumarasamy, Algal Buffer layers for enhancing the efficiency of anthocyanins extracted from rose petals for natural Dye sensitized solar cell (DSSC). *International Journal of Energy Research*, 42 (2), 790-801, (2018), Wiley Publication, Impact Factor:5.164.
8. N. Prabavathy, S.Shalini, R.Balasundaraprabhu ,Dhayalan Velauthapillai, S. Prasanna, Pravin Walke, N. Muthukumarasamy, Effect of solvents in the extraction and stability of anthocyanin from the petals of *Caesalpinia Pulcherimma* for natural dye sensitized solar cell applications, *Journal of Material Science: Materials in Electronics*, 28 (13), 9882- 9892, (2017), Elsevier, Impact factor : 2.478
9. S. Shalini, N.Prabavathy, R.Balasundaraprabhu, Sathish Kumar, S. Prasanna ,Dhayalan Velauthapillai, “Studies on DSSC encompassing flower shaped assembly of Na-doped TiO₂ nanorods sensitized with extract from petals of *Kigelia Africana*”, *Optik*, 155, 334-343, (2018), Elsevier, Impact Factor : 2.443
10. S.Shalini, N. Prabavathy, R. Balasundaraprabhu, T. Satish Kumar, Pravin Walke, S. Prasanna Dhayalan Velayuthapillai, Effect of Na doping on structure, morphology and properties of hydrothermally grown one dimensional TiO₂ nanorod structures, *Journal of Material Science: Materials in Electronics*, 28 (4), 3500-3508, (2017), Elsevier, Impact factor : 2.478.
11. G. Balaji, R. Balasundaraprabhu, S. Prasanna, N. Prabavathy, D. N. McIlroy, and M. D. Kannan, “Investigations of RF magnetron sputtered CZTS absorber layer thin films prepared using sulfur induced binary targets without sulfurization,” *Optical Materials*, 75, 56–60, (2018), Elsevier, Impact factor: 3.08.

12. G. Balaji, R. Balasundaraprabhu, S. Prasanna, N. Prabavathy, M.R. Venkatraman, Vijayshankar Asokan, Muthukumarasamy, M.D. Kannan, K. Sivakumaran, Investigations on Hot-wall deposited Cadmium Sulphide buffer layer for thin film solar cell, Materials Letters 222 ,82-87, (2018)., Elsevier, Impact factor: 3.423
13. G.Balaji, N.Prabavathy, R.Balasundaraprabhu, S.Prasanna, David McIlroy, S.Sivakumaran, "Influence of Sulphurization on the formation of $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) absorber layer thin films deposited using RF Magnetron Sputtering, Thin Solid Films, 695, (2020), Elsevier, Impact Factor : 2.188
14. N.Prabavathy, R.Balasundaraprabhu, Dhayalan Velauthapillai, Chapter title "Natural Dye Sensitized Solar cells - Strategies and Measures", for Book titled "Rational Design of Solar Cells for Efficient Solar Energy Conversion, Wiley Publications, DOI: 10.1002/9781119437499.ch3, (2018).