

Research Centre 3

Subject : Environmental Chemistry

Centre for Nanotechnology supported Clean Environment & Energy



Co-ordinator : Dr. Shubhrajyotsna Aithal

Description :

There is an ever-increasing demand for natural resources and living space for humans, while toxics continue to build up in our water and soil. Biodiversity is being destroyed worldwide with 7 million hectares of forest being lost annually. Half of our world's forests and a quarter of our coral reefs are gone. Biodiversity decreases each year, with increasing threats especially to the oceans. Damage to the atmosphere's ozone layer has slowed but a hole still remains. Many believe that man-made greenhouse gases are causing disruption to the planet's climate, a process popularly termed 'global warming.' Proposals to correct this are expensive and unlikely to be followed by developing nations who see economic advance as more urgent. Nanotechnology will provide solutions through precision pollution monitoring using nanosensors, lower energy needs due to lightweight strong materials, and reducing the use of harsh cleansers through the applications of nanocoatings to surfaces. A more advanced nanotechnology solution will be building our products with molecular-level precision through the use of productive nanosystems, resulting in virtually no chemical waste.

Objectives :

- (1) Study of nanotechnology as general purpose universal technology.
- (2) Use of nanotechnology and techniques in controlling environmental pollution.
- (3) Use of nanotechnology and techniques in optimizing the potable water production.
- (4) Investigation of suitable materials in polymer matrix for renewable energy production.
- (5) Investigation of suitable devices for large scale environmental cleaning.

Publications / Working Papers :

[1] P. S. Aithal & **Shubhrajyotsna Aithal**, (2015). "Ideal Technology Concept & its Realization Opportunity using Nanotechnology", International Journal of Application or Innovation in Engineering & Management (IJAIEM), Volume 4, Issue 2, pp. 153 - 164, 2015,ISSN 2319-4847. DOI: <http://doi.org/10.5281/zenodo.61591>. SCOPUSindexed.

[2] P. S. Aithal, & **Shubhrajyotsna Aithal**, (2015) A review on Anticipated Breakthrough Technologies of 21st Century, International Journal of Research & Development in Technology and Management Sciences, Vol. 21, Issue 6, pp. 112 - 133, ISBN - 1-63102-450-7. DOI: <http://doi.org/10.5281/zenodo.61617>.

[3] P. S. Aithal, and **Shubrajyotsna Aithal**, (2016). Nanotechnological Innovations & Business Environment for Indian Automobile Sector : A Review, International Journal of Scientific Research and Modern Education (IJSRME) (www.rdmodernresearch.com) Volume I, Issue I, 2016, pp. 296-307. ISSN (Online): 2455 – 5630, DOI : <http://doi.org/10.5281/zenodo.62030>.

[4] P. S. Aithal and **Shubrajyotsna Aithal**, (November 2016). Nanotechnology Innovations and Commercialization – Opportunities, Challenges & Reasons for Delay. *International Journal of Engineering and Manufacturing (IJEM)*, 6(6), pp. 15-25, ISSN: 2305-3631. DOI : <http://doi.org/10.5281/zenodo.161161>, DOI: 10.5815/ijem.2016.06.02.

[5] P. S. Aithal & **ShubhrajyotsnaAithal**, (2016).Nanotechnology Innovations & Business Opportunities in Renewable Energy Sector, International Journal of Engineering Research and Modern Education (IJERME) ISSN (Online): 2455 - 4200 (www.rdmodernresearch.com) Volume I, Issue I, 2016, pp. 674- 692. DOI : <http://doi.org/10.5281/zenodo.62031>.

[6] [23] P.S. Aithal and **Shubhrajyotsna Aithal**, (2016). Opportunities & Challenges for Green Technology in 21st Century, International Journal of Current Research and Modern Education (IJCRME) ISSN (Online): 2455 - 5428 (www.rdmodernresearch.com) Volume I, Issue I, pp. 818-828, 2016, DOI : <http://doi.org/10.5281/zenodo.62020>.

[7] **Shubhrajyotsna Aithal**, & Aithal P. S. (July 2018). Concept of Ideal Water Purifier System to Produce Potable Water and its Realization Opportunities using Nanotechnology.*International Journal of Applied Engineering and Management Letters (IJAEML)*, 2(2), 8-26. DOI: <http://dx.doi.org/10.5281/zenodo.1323714>.

[8] Aithal, P. S. and **Shubhrajyotsna Aithal**(August 2018). Study of various General-Purpose Technologies and Their Comparison towards developing Sustainable Society. *International Journal of Management, Technology, and Social Sciences (IJMTS)*, 3(2), 16-33. ISSN : 2581-6012. DOI : <http://dx.doi.org/10.5281/Zenodo.1409476>.
