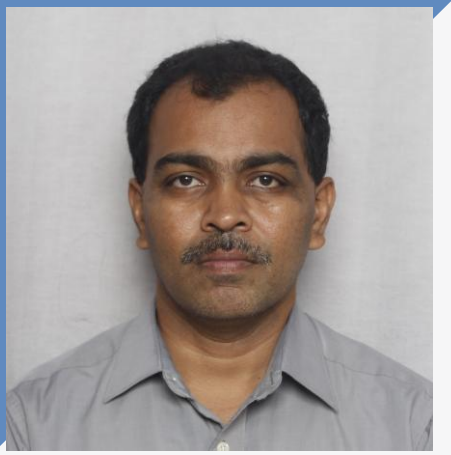

Dr K Dheeban Chakravarthi

Professor - Research

Bioengineering

Contact

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About Me

I work on development of algal biofuels, a promising option for renewable fuels in future. My focus areas are outdoor algal production, algal growth system design, algal harvest, lipid extraction and techno-economic analysis (pilot-scale R&D). I have set up of a marine algal facility in Navi Mumbai, as part of the DBT-TERI Center of Excellence on Advanced Biofuels and Biocommodities. This houses a 100,000 L (220 sq. m) algal growth system based on sunlight distribution and related downstream process units,. I have been working on commercial development of β-carotene from algae and integrated carbon capture from industrial emission sites for algal production. I also have a keen interest in solid waste management.

Research Interests

- Outdoor algal growth systems
- Algal harvest
- Algal lipid extraction
- Technoeconomic analysis
- Algal Bioproducts
- Solid waste management

Education

PhD in Chemical Engineering, The Pennsylvania State University, University Park, Pennsylvania, USA (2009)

MS in Chemical Engineering, The Pennsylvania State University, University Park, Pennsylvania, USA (2004)

B Tech in Chemical Engineering, AC Tech, Anna University, Guindy, Chennai, India (2002)

Research Experience

- Have set up of a marine algal facility in Navi Mumbai, as part of the DBT-TERI Center of Excellence on Advanced Biofuels and Biocommodities. This houses a 100,000 L (220 sq. m) outdoor algal growth system and related downstream process units.
- Have developed a sunlight distribution-based improved productivity outdoor algal growth system.
- Have developed a methodology to harvest algae based on self-aggregating of select algae.
- Have developed a method to extract lipids from wet algae without the need for land/energy-intensive drying step.
- Have conceptualized and collaborated with partners to develop algal co-products (aquafeed, cattle feed, biodegradable plastics, chemicals) from deoiled algae to make the overall process economically viable.
- Undertake technoeconomic analysis of the various projects he works on.
- Have been working on commercial development of β-carotene from algae (natural, anti-oxidant).

Funded Projects

1. Integrated Production of Advanced Biofuels and Biocommodities – Funded by: Department of Biotechnology; Budget: Rs 3.50 crores; Year: 2018
2. Photobioreactor and Harvest Technology for Algal Biofuels – Funded by: Department of Biotechnology; Budget: Rs 90 lakhs; Year: 2015
3. Bioenergy Feasibility Study for Maldives – Funded by: Ministry of External Affairs; Budget: Rs 54 lakhs; Year: 2015
4. Integrated Technologies for Biobased Energy – Funded by: Department of Science and Technology; Budget: Rs 28 lakhs; Year: 2013
5. India Energy Security Scenarios - 2047, Sector: Bioenergy – Funded by: Department for International Development (DFID), UK; Client: Niti Aayog; Budget: Rs 42 lakhs; Year: 2014

Consultancy Projects

1. Extraction of omega fatty acids from fungi for infant food (2025)
2. Development of commercial beta-carotene production from microalgae (2025)