



## PROFESSIONAL DETAILS

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Job title: Chief Manager (R&D) - Alternate Energy & Petrochemicals  
Organization: Corporate R&D Centre, Bharat Petroleum Corporation Ltd., Greater Noida  
Tenure: 2006 – till date

## EDUCATION DETAILS

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Ph.D. (Chemical Engg.) : University of Petroleum & Energy Studies (UPES), Dehradun  
Masters in Chem. Engg. : Institute of Chemical Technology (ICT), formerly UDCT, Mumbai  
B. Tech (Chem. Engg.) : Govt. Engg. College, Thrissur

## AREAS OF EXPERTISE

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- **Alternate Energy Technologies:**

- Electrolyser technologies, scale-up
- Metal hydride based hydrogen purification & storage
- Energy storage technologies
- Performance enhancement of Solar Photovoltaic power generation systems
- Indigenous novel reactor based Biomass pyro-gasification process for production of hydrogen-rich syngas
- Pyrolysis oil conversion to hydrogen
- Bio-ATF production in existing Naphtha hydro-treater: feasibility study
- Compact thermal swing sorption-enhanced steam methane reforming (SESMR) process for direct production of high purity hydrogen
- Hydrogen separation & purification by hollow fiber polymeric membranes
- End-to-End (room temperature) Biodiesel process
- Adsorptive storage of hydrogen & its use as fuel in IC engine vehicle
- Energy efficiency enhancement in refinery processes- low grade heat utilization, heat flux intensification in heat exchangers by use of tube inserts
- Thermal efficiency enhancement of LPG/PNG burners

- **Petrochemical Technologies:**

- End-to-end process know-how for Acrylic acid based Superabsorbent Polymers (SAP) for hygiene & non-hygiene application
- Olefin oxidation for Methacrylic acid and Acrylic acid Production
- Niche value added products based on Acrylates, Polyether Polyols, and Polyolefins

## **OTHER ACCOMPLISHMENTS**

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- Professional association with Indian & International scientific bodies, research institutes
- Reviewer for peer-reviewed international journals- International Journal of Hydrogen Energy, Energy Conversion and Management
- Publications: 13 (National & International Journals)
- Patents: Co-inventor in 7 Indian patents filed
- Presented several research works on hydrogen as automotive fuel, compact SMR process, and biomass gasification in Petrotech, International Symposium on Fuels and Lubricants (ISFL), Refinery Technology Meet (RTM) and Solid Waste Management (SWM) Conferences.
- Best paper award for “New Biomass Gasifier” research paper- 5th SWM Conference, 2015.

## **RECENT PUBLICATIONS (LAST 5 YEARS):**

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- Renny Andrew, Gokak D.T., Pankaj Sharma, Shalini Gupta (2016) Novel hydrogen-rich gas production by steam gasification of biomass in a research scale rotary tubular helical coil gasifier, Int. J. Energy Research 40(13): 1788-1799.
- Renny Andrew, Gokak D.T., Pankaj Sharma, Shalini Gupta (2016) Practical achievements on biomass steam gasification in a rotary tubular coiled-downdraft reactor, Waste Management and Research 34(12):1268-1274.
- Renny Andrew, Santhosh Viswanathan, Nitin Somkuwar, D.T. Gokak, Pankaj Sharma, Sanjay Bhargava (2017) Pyrolysis of deoiled cake of Jatropha Curcas and catalytic steam reforming of pyrolytic bio-oil to hydrogen, Bioresource Technology 220: 151-160.