

CSIR
Technology
Awards
2015



CSIR

Council of Scientific & Industrial Research
Anusandhan Bhawan, Rafi Marg, New Delhi – 110001



CSIR's Vision

Pursue science which strives for
global impact, technology that
enables innovation-driven
industry and nurture trans-disciplinary
leadership thereby catalysing
inclusive economic development
for the people of India



About the CSIR Technology Awards

CSIR Technology Awards were instituted in 1990 to encourage multi-disciplinary in-house team efforts and external interaction for technology development, transfer and commercialization. These awards are in the category of:

- ◆ **Life Sciences;**
- ◆ **Physical Sciences including Engineering;**
- ◆ **Innovation (to be awarded to the best innovation that has been patented in any area);**
- ◆ **Business Development and Technology Marketing; and**
- ◆ **Most Significant CSIR Technology of the Five Year Plan Period.**

Whilst, all the awards carry the cash prize of Rs. 2 lakh each, the award for the “Most Significant CSIR Technology of the Five Year Plan Period” has a cash prize of Rs. 5 lakh. The prizes are shared among the individual/ members of the teams. In case the prize is awarded to joint winners, both receive the cash prize in full.



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CSIR Technology Awards Criteria

The criteria for the awards in Life Sciences and Physical Sciences including Engineering is visible and sustained impact of a high order on the industrial/ economic/ societal activity, high scientific content, innovative character, global novelty and competitiveness of the technological development.

Technology Award for Innovation is given to the best innovation that was patented in any area.

Technology Award for Business Development and Technology Marketing is for making significant contributions for enhancing the business of CSIR knowledgebase and is given for the new business & marketing initiatives, strategies evolved and implemented, quantum of business generated and realised.

The award in the category "Most Significant CSIR Technology of the Five Year Plan Period" is awarded to such technology which has proven in the market place, atleast for 5 years.

The Winners-2015



CSIR-CIMAP



CSIR-NBRI



CSIR-IICB



CSIR-CDRI



CSIR-CLRI



CSIR-CGCRI



CSIR-NCL



CSIR-NAL



CSIR-IIP



CSIR-NML



CSIR Technology Award for Life Sciences - 2015

CSIR Technology Award for Life Sciences goes to CSIR- Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow for development of improved varieties and promotion of cultivation of medicinally important Aswagandha for improving the economy of small and marginal farmers in Semi-Arid Tropical (SAT) regions of Deccan Plateau in association with Teams at CSIR-NBRI, Lucknow; CSIR-CDRI, Lucknow and CSIR-IICB, Kolkata

Withania somnifera, commonly known as 'ashwagandha' is one of the most important medicinal plants which is used alone or in combination with other medicinal plants in various Indian systems of medicine. The dried roots of Ashwagandha are the primary economic part and the starch and fibre contents play a dominant role in determining root quality. In order to improve the root yield with better quality, CSIR-CIMAP in association with teams at CSIR-NBRI, CSIR-CDRI and CSIR-IICB has developed several new and improved varieties such as Poshita, NIMTLI-118 etc. The developed Aswagandha varieties coupled with effective extension activities increased the area under cultivation and improved the quality of life of more than 6300 small and marginal farmers (53 clusters in five districts) in the SAT regions of the Deccan plateau by raising their income more than two folds in comparison to the conventional crops. The seeds of developed varieties are very well sought after by the farmers and it is expected that these varieties will completely replace the local varieties in the next 3-4 years.



CSIR Technology Award for Physical Sciences including Engineering -2015

The Technology Award for Physical Sciences including Engineering goes to CSIR – National Chemical Laboratory (CSIR-NCL), Pune for developing solid catalyst and continuous process for biodiesel

Biodiesel produced from inedible vegetable oils is an attractive alternative to the conventional diesel. Its use leads to energy-independence. It brings in environmental (low / zero carbon emissions), economic (low energy import and dollar earning) and societal (jobs for rural population) benefits. The conventional route of its production from vegetable oils using homogeneous catalysts is non-eco-friendly. CSIR-NCL has developed a greener method for biodiesel production, which employs a proprietary solid, reusable, acid catalyst and a continuous fixed-bed process. Unlike the conventional method, CSIR-NCL process converts a variety of inedible oils and animal fat into biodiesel in high yields and greater selectivity. It combines esterification of free fatty acids and trans-esterification of glycerides into a single process step - a long standing technology goal of biodiesel. CSIR-NCL licensed this process (covered under four foreign patents) to Benefuel Inc., USA. The process was validated in the pilot-plants. Benefuel Inc. in association with Flint Hill Resources, USA is setting a commercial biodiesel manufacturing facility of 160,000 ton/year capacity at Beatrice, Nebraska, USA, based on CSIR-NCL's technology. CSIR-NCL has realized about 1.75 million US\$ for patent licensing, testing, development and royalty. CSIR recognizes the contribution of Benefuel Inc., USA for pilot plant erection, operation and commercialization of the technology.



CSIR Technology Award for Innovation – 2015

The Technology Award for Innovation goes jointly to CSIR-Central Glass and Ceramic Research Institute (CSIR-CGCRI), Kolkata for development of completely packaged all-fiber supercontinuum light source and CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai for development of enzyme formulation for rapid fiber opening of skin matrix

Development of completely packaged all-fiber supercontinuum light source

CSIR-CGCRI alongwith M/s. Vinvish Technologies has developed a completely packaged all-fiber supercontinuum light source which is reliable, affordable and relatively simple to operate. By varying the design parameters, the Photonic Crystal Fibre (PCF) can be fabricated to have zero dispersion at a given wavelength, thus enabling symphony of various nonlinear processes with soliton formation and dispersive wave generation in a specific length of PCF resulting bright supercontinuum light at the output. Widest spectra are obtained when the pump pulses are launched close to the zero- dispersion of the PCF. The innovation will bring a paradigm shift in the arena of photonic products in the country towards high density medical imaging and bio-photonics.

Development of enzyme formulation for rapid fiber opening of skin matrix

CSIR-CLRI has developed an enzyme formulation for fiber opening of hides and skins which ensures transformation of a slow and chemical intensive, polluting process into a benign and rapid process. This technology is first of its kind in the world which produces the fibre opening in thirty minutes whereas conventional processing takes several hours/ days. The enzymatic fibre opening process requires only 1/3 volume of the water compared to chemical process resulting in reduction of cost of water and effluent treatment.



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CSIR Technology Award for Business Development and Technology Marketing -2015

The CSIR Technology Award for Business Development and Technology Marketing goes to CSIR-National Metallurgical Laboratory (CSIR-NML), Jamshedpur for significantly enhancing the business and markets of knowledgebase

CSIR-NML has significantly enhanced the business for its knowledgebase through innovative methods, building strong linkages with major stake holders and adopting unique revenue generation models. CSIR-NML has emerged as a customer sensitive and globally competitive research institute in the area of minerals, metals and materials by introducing technology partnerships and collaborative business models with Indian industries, foreign clients and multinationals. CSIR-NML has adopted several new strategies and business models for technology development, pricing and sharing of its knowledgebase, marketing of technologies and utilization of its infrastructural resources by the industry which have led to a sustainable and cumulative growth of over 50-60% in its External Cash Flow (ECF) over a period of five years. The strategy to obtain joint IP with industry has also led to meaningful patents with much lower dormancy.

CSIR-NML has continuously improved its relationship with customers and entrepreneurs by analysing their needs, by optimizing project pricing, measuring and monitoring changes in customer satisfaction and adjusting its strategy to the changes in the markets. It has implemented 360 degree accountability of project finances and time-lines to maximize effective utilisation of resources.



CSIR Technology Award for Most Significant CSIR Technology for the Plan Period -2015

CSIR Technology Award for Most Significant CSIR Technology for the Plan Period goes jointly to CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun for developing technology of a novel catalyst “Thoxcat ES” for sweetening of LPG and lighter petroleum fractions and CSIR-National Aerospace Laboratories, Bengaluru for development of indigenous state-of-the-art aerospace class autoclave technology

Technology development of a novel catalyst “Thoxcat ES” for sweetening of LPG and lighter petroleum fractions

To conserve environment, removal of sulfur compounds from hydrocarbon fuels has been of prime importance. CSIR-IIP alongwith BPCL has developed a globally competitive catalyst trade named Thoxcat ES to remove sulfur present as mercaptans in LPG to below 5 ppm levels. The invention is heavily protected by several patents in India, US, UK and France. The technology to manufacture this catalyst has been licensed to M/s Lona Industries, Mumbai. This catalyst has been commercialized in number of Indian refineries and performing successfully for more than five years now. It has recently been exported to Sohar Refinery in Oman. Thoxcat ESTM being technologically superior has been successful in breaking the monopoly of multinationals, which is also in line with the “Make in India” mandate of the government. Moreover, being techno-commercially superior it is expected to successfully compete internationally and capture significant share of the global market.



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Development of indigenous state-of-the-art aerospace class autoclave technology

CSIR-NAL has designed and developed a large indigenous state-of-the-art autoclave as well as a high temperature and high pressure autoclave with several innovative features. These autoclaves have paved the way for the development and production of advanced composites structures for nationally important aircraft programs, such as Tejas / LCA (Light Combat Aircraft) and SARAS. It has also developed cost effective lab-scale autoclaves for educational and research institutes. CSIR-NAL has joined hands with M/s Unique Chemoplant Equipments, Mumbai and M/s. Datasol Pvt. Ltd., Bengaluru for manufacturing of mechanical systems & marketing of autoclaves and manufacturing of Electrical, Control and Instrumentation systems respectively. During the past four years the CSIR-NAL led PPP consortium is able to win several prestigious orders worth Rs.100 million against stiff international competition. Orders worth several millions are in the pipeline. The consortium has successfully delivered autoclaves to premier research institutes, space and defense sectors. Besides generation of revenue, the developed technology has resulted in self-reliance, growth of Indian industrial ecosystem, employment generation (about one lakh man hour) and many more cumulative benefits in terms of autoclave life cycle support and composites research and development.



CSIR@80 : Vision & Strategy 2022

Science

Strive for global scientific impact

Technology

Catalyse innovation-driven industry

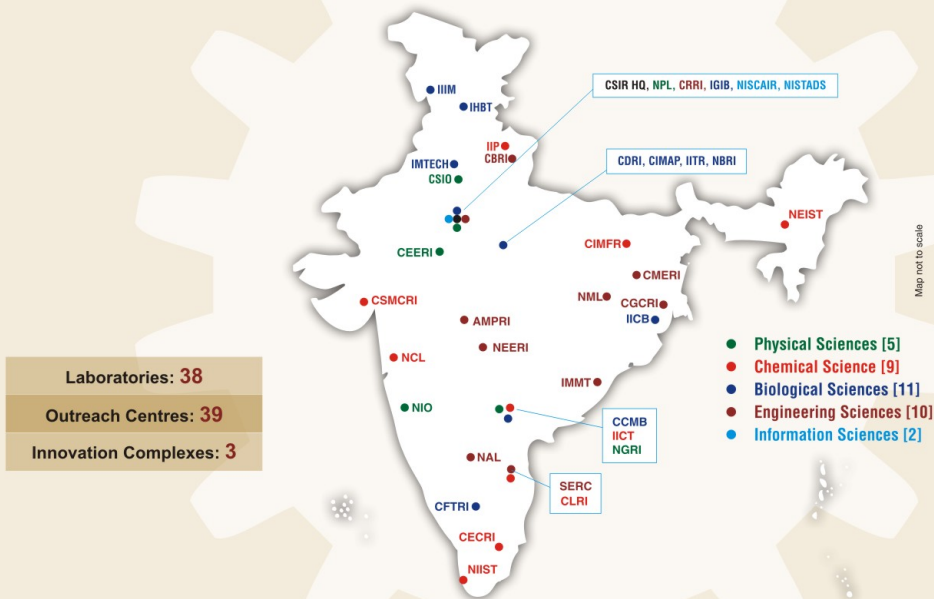
Human Resource

Nurture transdisciplinary leadership

Empowerment

Enable inclusive economic development

CSIR - Post Independence Indian Innovation System for Self Reliance in Non-strategic Sectors



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