

**The Scheme of
National Awards for Technology Innovation in
Petrochemical and downstream Plastic Processing
Industry**

- 1 Petrochemicals comprise of plastics and most of other chemicals as downstream hydrocarbons derived from crude oil and natural gas. These hydrocarbons are a valuable resource and constitute vital raw- materials in industry. The value added petrochemical products all along the value chain cater to the needs of textiles and clothing, agriculture, packaging, infrastructure, healthcare, furniture, automobiles, information technology, power, electronics, telecommunications etc.
- 2 The Government of India announced the National Policy on Petrochemicals in April 2007. The policy envisioned the following:
 - Development of value added, quality petrochemical products at globally competitive prices using eco-friendly processes and technologies.
 - Innovation of newer application and products with focus on sustainable development.
- 3 The vision is to be achieved through promotion of Research and Development and Human Resource Planning and Development. Towards furtherance of this objective, the policy envisaged institutionalization of National Awards for Technology Innovation in various fields of Petrochemicals and Downstream Plastic Processing Industry.

R&D Status & its prospects:

- 4 The level of R&D investments in Indian Chemical sector is low at around 0.3% of total sales. The areas for strengthening of R&D in Chemical Industry include improvements in manufacturing process for reduction in cost of production, application development to diversify demand, and new product development. Currently the expenditure on R&D in the Petrochemical sector is less than 1% of industry turnover. This needs to be increased in phases to 2 to 3%. India has a highly trained manpower base. However, as per world industry estimates,

inadequate R&D infrastructure is a constraint for attracting investment in innovation. Ultimately, India stands to lose out in the world of polymer and plastic market if low-cost-high-return programmes are not implemented by the government.

- 5 The future Research & Development vision of the Petrochemical industry needs to provide long term commitment to investment in R&D and strive for continuous innovation in terms of raw material usage, energy efficiency, process/operation improvement, technology forecasting and adoption of emerging technologies, in particular on recycling technologies and development of recycled products etc. It is also felt that new process technologies for high performance polymers (green processes etc.), thrust on new platforms, bio/ nano sciences as enablers for advanced polymeric materials are the need of the hour. At the same time R&D thrust in development of moulds, dies and tools cannot be over emphasized. Collaborative investment through Public Private Partnership (PPP) mode in technology development by Government, academic Institutions and Industry could push the agenda for R&D in this sector, which will have a long term impact on the Industry.

NEED FOR INNOVATION

- 6 The Petrochemical sector is a key sector of the global (and Indian) economy. At the same time there are public apprehensions about the adverse impact of plastics on environment and health. This concern needs to be addressed by being at the forefront of technology development in this sector as also to enhance the pace of innovation in this field. This on the one hand, would create pressures that would motivate companies to innovate and on the other hand, the environmental concerns will guide sustainable product and process interventions.
- 7 With the above mentioned objectives, Government of India, Department of Chemicals & Petrochemicals has decided to set up an Award Scheme to incentivize meritorious innovations and inventions in the field of polymeric materials, products, processes and other areas of national and social importance.

The polymeric applications has already penetrated in all walks of life including various manufacturing sectors for conservation of natural resources and energy efficiency etc.

- 8 This innovation award scheme will motivate the inventors to carry out innovative Research & Development in the areas of petrochemicals industry, which in turn will improve performance / quality of the existing product. This award will be on outstanding contribution in R&D leading to better energy consumption, better plastic waste management, increase in product life cycle, development of innovative new products, quality standards, recycling and other emerging areas.

These awards are also intended to enhance innovative capacities to a level of international recognition. The ultimate objective is to develop and maintain the petrochemical industry as a globally competitive industry using eco-friendly processes & technologies

- 9 Copies of the proposed awards and the categories of awards are enclosed in statements at **ANNEXURE** - I & II respectively.
- 10 This scheme will help improve the performance of the existing product and its quality leading to better acceptance and increase in demand of the product in the competitive market of polymer and plastic. This will benefit Micro/Cottage/Small and Medium enterprises as well as larger companies.
- 11 Applicant has to apply **ONLINE** for award under any category/sub-category as per prescribed formats separately for Individual /Team, Industry and Academic Institution / R&D Institution.

IMPLEMENTATION FRAMEWORK & OPERATIONAL MODALITIES

12. The entry applications for awards will be screened and evaluated by the Expert Committee. The members of the Expert Committee will be nominated by the Department. The Expert Committee would be headed by Director General, CIPET. Evaluations of the Expert Committee will be placed before the Prize Award Committee, which would be chaired by Joint Secretary (Petrochemicals). The Prize Award Committee will have representation from National Level Academic Institutions / Research Laboratories, National Level Industry Associations, Expert Committee and representatives from Government of India. Prize Award Committee would then submit its recommendations on awardees for final approval of Secretary (C&PC).

13. Central Institute of Plastics Engineering and Technology (CIPET), Corporate – Guindy, Chennai - 600 032 has been entrusted with the work of processing of the applications, to which all applications may be addressed.

Annexure - I**Financial Outlay for Awards Prize**

| Sl. No. | Award Category | Receipt of Categories | Proposed Award | Outlay (Rs. in Lakhs) |
|----------------|---|--|-----------------------------|------------------------------|
| 1 | Innovation in Polymeric Material | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 2 | Innovation in Polymeric Products | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 3 | Innovation of Polymer Processing Machinery & Equipments | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 4 | Innovation in Polymer Waste Management & Recycling Technology and Green Polymeric Materials & Products | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 5 | Polymers in Agriculture and Water Conservation | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 6 | Polymers in Public Health Care | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 7 | Research in the field of Polymer Science & Technology (for Researchers Working in Academic Institute / research lab.) | Individual / Team Industry Academic and R&D Institution | Shield / Citation / Cash | 2.00 2.00 2.00 |
| 8 | Innovation in Petrochemicals and Newer Polymer Applications | Micro/Cottage Industries Small / Medium Industries Large Scale Industry | Shield / Citation / Cash | 2.00 2.00 2.00 |

CATEGORIES OF NATIONAL AWARDS

For 1-7, Sub-categories are: i) Individual/Team
ii) Industry
iii) Academic/R&D Institutions

1. Innovation in Polymeric Materials:

- ❖ New Polymers, Blends & Alloys, filled materials, fibers, Polymer, Composites and Nano composites, Smart Materials etc.

2. Innovation in Polymeric Products:

- ❖ New / creative product design.
- ❖ Non conventional application / Replacement of conventional materials (eg. Metals, ceramics etc.).
- ❖ Modification of product design for performance improvements.

3. Innovation of Polymer Processing Machinery & Equipments:

- ❖ Development of new processing techniques.
- ❖ Modification of machinery for higher efficiency/productivity / Automation.
- ❖ Energy conservation, product quality improvement.
- ❖ Improvement in moulds, dies and auxiliary equipments.

4. Innovation in Polymer Waste Management & Recycling Technology and Green Polymeric Materials & Products:

- ❖ Newer technology in plastic waste utilization into products/energy recovery.
- ❖ Recycling Technology.
- ❖ Plastic waste collection, segregation techniques.
- ❖ Product design for improved recyclability.
- ❖ Biopolymers.
- ❖ Biodegradable / compostable Polymers.
- ❖ Time controlled degradation.
- ❖ Green material filled polymers.
- ❖ Biodegradability evaluation techniques.

5. Polymers in Agriculture and Water Conservation:

- ❖ Water transportation, mulching, canal lining, Drip irrigation, Sprinkler system Low Tunnels, Poly house etc.
- ❖ Controlled release system for fertilizer, pesticides, micro nutrients, etc.
- ❖ Innovative packaging for agriculture, floriculture and horticultural produce.
- ❖ Controlled permeability films & packaging for improved shelf life
- ❖ Novel Usage of plastics for food security.

6. Polymers in Public Health care:

- ❖ Affordable / cost effective implants, implements and devices.
- ❖ New innovative products for medical application.
- ❖ Polymer based new drugs delivery system.
- ❖ Polymer body implants.
- ❖ Drinking water storage & transportation.
- ❖ Polymer membrane for water purification /Desalination.
- ❖ Devices for waste water, drainage, sewage treatment system.

7. Research in the field of Polymer Science & Technology:

- ❖ Individual / Team of researchers in R & D Institutions & laboratories
- ❖ Original research work in polymeric materials processing etc. leading to proto type development & future industrial applications.

8. Innovation in Petrochemicals and Newer Polymer Applications

Sub categories are: i) **Micro / Cottage Industries**
ii) **Small / Medium Industries**
iii) **Large Scale Industries**

- ❖ Petrochemicals & Newer Polymer applications in any field to enhance the working environment, Life cycle, Energy efficiency, Re-cyclability etc.