

"We must see the face of the customer or stakeholder clearly in every project we undertake in the laboratory"



He is arguably one of the best polymer chemists that India has ever produced. An IITian, his outstanding scientific achievements extend to combining scientific research with technology development, industrial applications and R&D management, which have showered on him several awards and accolades. He is a fellow of most of the learned scientific societies in India and abroad. He has authored over hundred and seventy-five papers and has seventy-five patent applications to his credit. He serves as a director on the boards of several big corporate houses... the list goes on. Meet **Dr Swaminathan Sivaram**, the brand new director of National Chemical Laboratory (NCL), Pune; the largest laboratory devoted to the area of chemical and related sciences in India. In an exclusive interview with **Manas R Bastia**, he throws light on several critical issues including striking a synergy between research institutions and the industry in India. Excerpts:

■ Congratulations on donning the mantle of the Director of NCL. How would you describe your passage to this prestigious position?

I feel a sense of humility and a great burden of responsibility as I assume the office of Director, National Chemical Laboratory, Pune. NCL has had a glorious history of fifty plus years as a premier laboratory of the Council of Scientific and Industrial Research. Its services to the Chemical Industry in India is widely recognised. It has always blazed new trails in the area of chemical sciences. It has been a provider of highly qualified human resources to the Indian Chemical Industry.

NCL has had the privilege of being led by men of great distinction, who were visionaries and built an organisation that could cope up with the changing demands of time. It is, therefore, with great humility that I occupy this chair. It will be my commitment to build a strong and vibrant organisation, focused on goals and securing the future that beckons us.

■ What would you term as the most significant contributions of NCL to the chemical industry?

NCL's contribution to the Chemical Industry of India has a history of over three decades. NCL built a strong school in process chemistry and development, which was the springboard of the domestic pesticide industry in the early sixties. The emergence of domestic pesticide industry was an integral part of the "Green Revolution" which led to the self-sufficiency in food. Later, NCL contributed to the growth of the fine chemical industry in India. One may recall that Hindustan Organic Chemicals was an enterprise that was established to produce industrial organic chemicals based on NCL's know how in the early seventies. In the late eighties several catalytic processes were developed (styrene

based on alcohol, xylene isomerisation) which went into commercial production. In the early nineties, NCL recognised the need for developing globally competitive chemical industry, which could survive the onslaught of progressively lowering tariff barriers and easy imports. This led to development of processes for chemicals like THPE, m-dichlorobenzene and acrylamidomethyl propane sulfonic acid. These are chemicals that are available only with one or two vendors in the world. This makes entry barrier into domestic markets low and opens up immense opportunities in the export markets.

■ What is the present focus of research at NCL? Are any technologies close to commercialisation – particularly of interest to the chemical industry?

NCL's focus in R&D has been to transform itself continuously to keep up with the changing environment. At present, NCL is looking at a variety of technologies, which may have great relevance in the future. These include, new process chemistry for pharmaceutical intermediates, biopesticides, biocatalytic processes for high value chemicals, process technologies for efficient utilisation of constituents of bagasse, fermentation technologies for producing high value monomers for biodegradable polymers, catalysts for reforming hydrogen production needed for fuel cell applications etc. A commercial plant for the manufacture of acrylamidomethyl propane sulfonic acid, an important monomer for water-soluble polymer is expected to go on stream in early November. Recently, a plant for the manufacture of sorbic acid based on NCL's effort has gone on stream successfully. A single isomer drug, s(-) amlodipine has been introduced into the market just a few days ago based on a novel separation processes developed at NCL.

- **Being the immediate successor to Dr Paul Ratnaswamy, it is anybody's guess to have high expectations from you. What is your vision and future plans for NCL in this regard?**

My vision for NCL involves, building a competitive research and development organisation based on unique skills and knowledge base and contemporary facilities. NCL must become an agile, quick to respond and "easy to do business with" organisation. NCL would like to partner high quality R&D with our customers based on "a relationship" model built on mutual trust and confidence. In all contract research programmes, NCL would be highly customer focussed and driven by outcomes rather than outputs.

To accomplish these tasks, NCL hopes to take several initiatives in the future. Firstly, I am looking at all our internal processes and see how we can make it more efficient. We will use the power of IT to simplify many of our internal processes. We hope to attract the finest talents from anywhere in the world to come and work at NCL. We shall build contemporary world-class facilities for research. In the next few months, we will commission a state-of-the-art combinatorial chemistry facility including high throughput screening capabilities. This will be the first of its kind in India. We have just installed some very sophisticated facilities for polymer compounding and measurement of rheological properties of complex fluids. We have just commenced the construction of a Digital Resource Information Centre at NCL, which will house all our digital information resources. The building and the facility will be ready by April 2003. We are in the conceptual planning stage of a world class Materials Chemistry Laboratory, which will integrate the interdisciplinary strengths of NCL in the area of polymer science, new organic materials and nanoscience and technology.

- **Which are the important projects currently underway at NCL in this direction?**

NCL is currently working with several companies in India on contract research projects. These include process development of fine organic chemicals, new catalytic processes, specialty polymers for oil industry, new processes for drugs and drug intermediates, improved polypropylene nano-composites, performance additives for engineering plastics etc. Our contractual obligations with our industry partners prevent us from divulging the details of these activities.

- **How successful has NCL been in living upto the motto of 'research as business' proposed by Dr R A Mashelkar, DG-CSIR? How far is the day when NCL will subsist only on the income generated by its own research activities without the help of any outside funding?**

NCL has focused on "business driven research" in the last five to seven years. This has given a new perspective to our scientists and helped them to align their research more

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closely to business needs of enterprises. NCL today generates close to 50% of its total budget from resources outside of CSIR. I do not think NCL can become fully self financing within the next decade or so. I am not even sure whether it is desirable to envisage such a business model for NCL. CSIR - NCL performs many activities for a diverse group of stakeholders - from society to industry. A fully self-financed business model for laboratories like NCL may constrain some of its activities.

- **In India, the lack of a synergy between research institutions and the industry is always lamented. How do you propose to establish this at NCL?**

NCL proposes to bridge the chasm between industry and publicly funded research through several initiatives. Some of these initiatives have been put in place by CSIR itself. Firstly, we will put in place mechanisms of effective interaction between industry and the laboratory. The interface will become easy and efficient. Our response time will be quicker. We shall strive to become more customer focused. We shall create forum for NCL - industry interactions. We shall communicate what we can do for industry in a clear fashion. NCL has several competencies, which can be leveraged by Indian industry. We shall make them clear. We shall also be candid in telling the industry what we cannot do. We are already participating in several industry-research laboratory projects through the New Millennium Indian Technology Leadership Initiative (NMITLI) programmes of CSIR.