Dear Colleagues,

It is indeed my privilege to address you all on this day, when I am assuming office as Director of NCL. I do so with great trepidation and humility. The task of leading this Laboratory is an awesome responsibility; The mere thought of stepping into the shoes of those distinguished men who had occupied the office before me is daunting.

It is, therefore, fitting that I begin my remarks by acknowledging the outstanding contributions of the past Directors of NCL, who, each, in their own inimitable style have left an indelible mark on this Laboratory :

- Professor Ed McBain (1949-52)
- Professor Robert Finch (1952-55)
- Professor K. Venkataraman (1955-68)
- Professor B.D. Tilak (1968-79)
- Dr. L.K. Doraiswamy (1979-89)
- Dr. R.A. Mashelkar (1989-95)
- Dr. P. Ratnasamy (1995-02)

By their vision and imagination, they created for us the future in which we are living today. They transformed the Laboratory at different coordinates of time, responded to changing needs, and left us strong to face the future.

I must also acknowledge the prescience of Dr. Doraiswamy and Dr. Mashelkar, who in 1987, convinced me that NCL was the right place and invited me to join

this Laboratory. They made me comfortable here and provided me the ambience to grow and helped unlock my inner potentials. If not for them, I would not be standing before you today. A scientist is essentially a product of the environment in which he has grown and the mentors who have shaped his life and thoughts. Today, I wish to pay my personal tributes to the mentors who shaped my life.

- Professor C.N.R. Rao (1965 - )
- Professor H.C. Brown (1967 - )
- Professor J.P. Kennedy (1971 - )
- Dr. S. Varadarajan (1974 - )
- Mr. Lovraj Kumar (1978 - )
- Dr. R.A. Mashelkar (1978 - )

Professor C.N.R. Rao, who opened the doors to the world of scientific research for me, Professor Herb Brown, who taught me the philosophy of science, not just organic chemistry, Professor Kennedy who exposed me to the relationship of polymer science to the world of chemical industry, to Dr. Varadarajan, who as Chairman of IPCL, let me observe from close quarters how a large enterprise is efficiently managed, to Late Mr. Lovraj Kumar, who taught me that if you want to create a future, you must learn to dream and think big and finally to Dr. Mashelkar who taught me the meaning of excellence and what hard work can accomplish by his living example. In life's journey every encounter is a matter of chance. I am grateful to my destiny that I could meet each one of them at the right turn of my life. If life is a living book, there is no better way to learn by being close to such great men.

The title of my talk today is **"Securing NCL's Future: Reflections and Challenges".** By choosing this theme, I wish to set our eyes on the future of this Laboratory, which all of us here today, must secure; not only for ourselves, but for future generations. If we do not do this, we shall collectively fail.

However, to reflect on the future, we must also understand the past.

*" Know the past, to know the present*
*Reflect on the future, to change the present "*
*A Chinese Proverb*

I intend to dwell on this since the time I came to NCL in 1988. I look upon my past fourteen years at NCL in roughly two halves, the first, between 1988-95 and then from 1995 to present. This also marks the tenure of two Directors, Dr. Mashelkar and Dr. Ratnasamy. The early nineties were years of crisis at NCL. The opening up of Indian economy generated new fiscal pressures. CSIR's support to the laboratory dwindled. We were pushed to a corner. Every crisis opens the doors to new opportunities. NCL, undaunted by surrounding gloom, forged ahead. The securing of a World Bank Loan to refurbish our ageing facilities, focus on Intellectual Property Rights (IPR) generation, aggressive forays into contract research, especially with multinational companies and creation of the NCL Research Foundation all stand out as outstanding initiatives of that period. The period 1995-2001 has been one of consolidation and reaping the rewards of our past. NCL entered an era of unprecedented prosperity. The period saw several new analytical and experimental facilities added, laboratories

refurbished, enhanced IT infrastructure and greater freedom to scientific staff in terms of, both, thought and action. Many of these initiatives will stand us in good stead as we forge ahead into the future. The late nineties also saw a surge of public funding for R&D in CSIR laboratories, through new initiatives such as, modernization grants, NMITLI, CSIR Golden Jubilee Funds, CSIR Inter-laboratory Coordinated Programs etc. All this has given us a feeling of well being and led to impressive gains in performance indicators such as publications, patents, etc.

I do not wish to dwell on statistics which all of you are very familiar with. I only wish to show a summary of our growth, that tells us how this laboratory has admirably met the crisis of the past. The Laboratory has also added to its ranks several new scientific staff during the last five years.

I wish to, therefore, place on record our grateful appreciation to our past two immediate Directors, Dr. Mashelkar and Dr. Ratnasamy, for having left for us an NCL, which is scientifically strong, financially sound and full of promise for the future.

With every change of leadership, there is bound to be a change of style and content. But I assure you that there will be no disruption

Having briefly reflected on the past, let us now focus our attention on how we may secure the future that lies ahead of us.

The world of chemical sciences is in a state of dynamic flux. Knowledge is growing exponentially. Tools of research are getting more sophisticated. New investments are determined by the content of ideas and knowledge, not on the quantity of capital. Replacing existing technologies or products or markets will require radical breakthroughs not incremental advances. The science we practice must be alive to these dynamics of change. This will require a critical relook at what we are currently doing and redefine future opportunities. Some of our current strengths which have helped us grow in the past decade may not be any more relevant in the future. We may need to create new skills and competencies which can meet new challenges. We need to identify new growth engines for the future, which will give this Laboratory the strength to face a new world a decade hence.

I hope we all agree that any research that we perform must be need and goal oriented. Only such an R&D can meet either current or future needs and hence, should be innovation or discovery driven, respectively.

How can we do this? I propose the following steps :

- Create a three and five year road map for NCL for each of our functional areas. These functional areas are not necessarily limited by the definition of scientific divisions as presently constituted.
- Define existing / potential areas of research excellence within NCL; evaluate their value to current / future needs and goals.

- Create a balance between innovation and discovery driven research. The former protects the present, whereas, the latter secures our future.
- Align all investments by NCL / CSIR in terms of human, financial and physical resources with the agreed road map.

In some respects, we have already begun our collective thinking towards these objectives. Many of you may recall discussions that we had initiated during the development of the Tenth Five Year Plan document last year. More recently we put together a plan on chemistry-biology interface, which was presented to our Research Council a few days ago. These documents will become the foundations on which we will collectively build the road map for the future.

To meet the challenges of the future, there are other imperatives that we must fulfill. These are :

- We must redefine the research process in terms of quality, efficiency, and productivity
- We must try and identify a stakeholder for every research activity
- We must generate greater value out of our existing assets / resources. We have invested in several new facilities costing more than Rs. 20 crores in the past five years. Before we add more, we must ensure that the existing facilities are used most productively.
- We must build 'virtual' R&D networks and groups within NCL with a shared vision and goal. We must spread the word that teams win not individuals

- The leadership of the Laboratory must convey to the scientists what it considers of value to the organization
- We must create new incentive / reward systems for performance
- We must proactively learn to partner with the academia in areas of research where we lack strength
- A large proportion of mission orientated research funding is now coming from the Government. There is a need for greater accountability on the part of the Laboratory to meet the expectations from publicly funded research.
- We need a transparent budget / resource allocation process to drive growth in research areas which we deem important
- We must subject ourselves to an internal performance audit of all our activities in terms of both outputs and outcomes

We must also reflect on some of our weaknesses and see how we may overcome them. These are,

- Few and isolated islands of excellence
- Large non performing assets
- Obsolescence of skills and knowledge
- Ill defined collective vision
- Poor understanding of work processes
- Inadequate business development strength
- Lack of technology implementation strategies; Good science is a necessary but not a sufficient condition for good technology

- Inadequate cross-functional interaction
- An organization which is **person** centered, not **system** centered

NCL, over the past few years has substantially broken down rigid hierarchies and pushed decision-making down. We need to continue this process further and dismantle the last vestiges of the 'command and control' model that is now a relic of the past. We need to redefine leadership roles including that of a Head of a Division. We need to reinvent several departments and divisions and define their new roles in the context of NCL of the future. I intend to begin an internal process to debate these issues with all functional heads and their staff. NCL, must become a self-propelled and a self-managed organization, where ideas bubble up from below and driven by a collective understanding of where we wish to go and why.

I believe that creativity in science cannot be organized or managed. It arises spontaneously from individual talents. Leadership can only facilitate. I also recognize that hierarchy, bureaucracy and futile paper work can destroy a creative organization.

To accomplish this and more we will need enabling support from several functions within NCL. First and foremost, we will need a strong communication network, which will link us to both our external and internal stakeholders. As a publicly funded R&D organization, we owe our existence is largely due to the

citizens of this country who have reposed our faith in us. We need to reach out to them periodically and tell them what we are trying to accomplish. We need to communicate amongst ourselves frequently. While electronic medium offers unprecedented convenience to enhance our communication, I strongly believe that it cannot wholly substitute human contacts or face to face meetings. We need to strike a balance between both the modern and traditional forms of communications. Many of you are aware of the communication portal ncl@home that we have recently established. I propose to strengthen it further, create local language content and build a “community” around the portal. I intend to meet all of you, individually as well as in groups, to understand the work you do. I will, at defined intervals, address all of you together at NCL, to let you know our progress. I will also aggressively use platforms outside of NCL to communicate our achievements and progress to our stakeholders,

I strongly believe that NCL must become a “learning” organization. If NCL has to grow we must open its windows and allow ‘winds of change’ to blow. We need to imbibe best practices from others who have done better than us. We need to learn new lessons of success in human endeavors. We need to bring outstanding scientists from India and around the world to inspire us to new heights of excellence. We need to understand from our peers in CSIR, government, industry and society on how to build organizational excellence. I intend to use every conceivable opportunity to ensure that we stay a ‘learning organization’.

I also propose that we create a dedicated “Learning Centre”, which will ensure that there is a place for all of us to gather in numbers, large and small and learn together.

We shall continue to strengthen our other most important support services. These include, Information and Library, IT infrastructure, Management Information Systems, Administration, Finance and Stores and Purchase. Our Information Division is already a pioneer in awakening us to the power of digital resources. We need to explore new avenues for its growth. Chemical and biodiversity informatics, electronic archiving of analytical results, chemicals repository database and knowledge management are few of the areas where we need to move aggressively forward in the years to come.

Our Management Information Systems are woefully inadequate. We need to create, divisional, departmental and functional reporting systems. We need to share all decisions within the Laboratory that affects a large body of our employees. Most of our project related information, right from contracts to progress reports, must be available electronically on the intranet.

Much has been accomplished during the past few years in improving the quality of our administrative, financial and procurement services; yet much remains to be done.

NCL is still a maze of paperwork with forms to be filled for every thing. I would like to suggest that we take two conscious decisions today to reduce this overburdening paper work. One, no new paper forms will be introduced at NCL from today onwards. Secondly, by March 31, 2003, we will reduce paper work for all of us by 25%. I intend to hold all my heads of departments accountable to meet these targets. Similarly, I would like to ensure that when a new student or employee joins this organization, we provide him with a navigational guide to work his way through the maze of paper work and procedures . This will help his integration into NCL easy and less painful. Whereas, amongst scientific staff we have succeeded to some extent in dismantling hierarchy, we have not done so well in some of our support functions. We need to push authority down, if we need to make decision-making quicker in our support systems.

Bureaucracy in an organization can be reduced only when we ask why we are doing certain things, which is being demanded of us. For some of the procedures, there is a purpose. People do not object to procedures or controls as long as they know why they exist. Few others are practiced by habit and serve no real purpose. Only a questioning organization can reduce bureaucracy.

All of us realize that efficiency in services cannot be accomplished without a strong IT infrastructure. NCL needs to substantially strengthen its IT infrastructure. We have a need to enhance IT applications to both R&D processes as well as support services. We need to look at our IT needs in a

holistic manner and create platforms, which are mutually compatible within functions. We need to move into web-enabled processes for all our daily work needs. Several efforts in this direction are already underway at NCL. I will keep you informed of these progressively. I will initiate internal processes to define the scope of our IT efforts. Since IT requires both software and hardware integration, all IT initiatives must be centrally discussed and approved. Isolated or piece meal efforts are likely to be counter productive.

Whereas, the reputation of a laboratory like NCL may be defined by its scientific achievements, I believe its character is defined by its culture and values. This includes such seemingly unimportant things like housekeeping, cleanliness of our toilets, quality of our gardens, upkeep of our colony, the quality of our guest house and cafeteria. We seem to have fallen short of our expectations in some of these areas in recent times. I intend to focus a part of my attention to these key activities. We have to ensure that NCL's image is not compromised by a lack of attention to these functions.

The student community at NCL is a valuable part of our research enterprise. They are equal partners in all our research endeavors. They are also our ambassadors, as they take the flag of NCL to distant places. My predecessor has created some excellent facilities for their welfare. I intend to continue this tradition. I also think there is a need to initiate a debate on the quality of training

that our students receive and benchmark it against comparable institutions elsewhere.

I also call upon our student community to organize more vigorous scientific activities. We need a symposium, at least once a year, where all our students can showcase their work. The walls of our laboratories are a little drab. I do hope they come alive with contributions of our students in the years to come. I would also like to provide special encouragement to students who chose to work in our laboratories at the interface of two disciplines. Our students need more opportunities to travel abroad to participate in seminars and conferences. I intend to find means for doing so.

Since the day I came to NCL, I have been a critic of our safety practices. NCL safety systems and practices are still thirty years behind contemporary standards. We need to vigorously pursue safety as a key component of our work. I shall work with my Safety Coordinator in launching new initiatives. We shall create a facility of an incinerator for waste solvent disposal. We have plans to build an effluent treatment plant to recycle and reuse water from the Laboratory. Safety is a collective endeavor. Only if you believe in it, we can create a safer place for all of us to work.

The NCL Research Foundation is a unique institution within NCL, which gives us unprecedented opportunities to encourage and reward excellence. In the

absence of such an institution and within the confines of a publicly funded institution, this would have been impossible. In my opinion we have yet to fully exploit the value of the Research Foundation. I intend to enhance the visibility of NCL Research Foundation and take initiatives to increase its corpus of funds. Through the Research Foundation we will strive to encourage excellence in all spheres. I plan to review the existing systems of rewards and enlarge them by instituting new reward systems. I also propose to give back to our fellow employees, especially, those not so well endowed financially, something they will value. For example, support towards education, vocational training for their children and the like. I strongly believe that the wealth of this institution must be shared for the common good of all our employees, especially, those who are less privileged than many of us.

Friends, I have reflected on what NCL must do to secure the future. I know that the challenge is daunting. These tasks will not be accomplished in a day. It will require patience, perseverance and above all hard work. It will require the commitment and efforts of all of us. I also know that my list of things to do is not complete or exhaustive. I look forward to advice and suggestions from all of you as to what we need to do more to further enhance the glory of this Laboratory. I seek your earnest cooperation in this great endeavor as we move forward. I have no idea how difficult this journey will be. But I know we will succeed. We cannot afford to fail.

Friends, I see myself today, just a trustee of this great institution, which bears the indelible imprint of many distinguished leaders of both science and men. I will hold this trust in great care, embellish it with whatever I can give and pass it on to the next person who will have the good fortune of leading this Laboratory. This is my solemn promise.