

**Speech Delivered by Dr G. Satheesh Reddy
Chief Guest, on the occasion of the 21st Annual Convocation at
NITK Surathkal**

Dr C Anandaramakrishnan, Director CSIR, Prof B Ravi, Director, NIT Karnataka, Surathkal, Faculty and Staff, Academicians, esteemed invitees, and student friends, my greetings to you all.

It is my pleasure to speak at the 21st Convocation of NIT Karnataka. On this special day, I congratulate the graduates, their teachers and family.

NITK has long been an educational institute of renown, with the presence of its alumni in distinguished roles across the country and beyond. I am particularly impressed and inspired by the vision of the Institute – *“To facilitate transformation of students into good human beings, responsible citizens and competent professionals, focusing on the assimilation, generation and dissemination of knowledge”*. Becoming good human beings, responsible citizens and competent professionals - these are three aspects, core values that are desirable for all. "Becoming a good human being" is inner transformation, a journey of the self. "Responsible citizens" - as people who have been privileged to have taken birth in Bharat, we need to give back to our country. This is the journey from "within" to "the outer world, our society". How do we do this? By becoming "competent" in our chosen profession. The bedrock of this journey is the "knowledge" you get from your teachers and your institute. Young student friends, this is the transformation that your institute visualizes for you, and I am sure you will bring laurels to yourself, your alma mater, and your country, in the days ahead.

Dear graduating student friends,

As you step out as accomplished young men and women, I implore you to give your best in building a strong, self-reliant India. As confident men and women who have the most important role to play as future citizens and ambassadors of the rich tradition of our great country, I am sure that you will put the knowledge imparted by your teachers to good use.

Allow me to share with you, my thoughts on our role as responsible citizens. As a nation, we are progressing towards the grand goal of becoming a global leader - on the social, academic, economic, scientific and technological - fronts. Achieving this goal is possible only when we collectively put in our best efforts to make our nation strong and self-reliant.

Speaking of technology, in the past few decades, the Science and Technology landscape has undergone tectonic shifts, with rapid developments in electronics, computer science and information technology. Never in the past has mankind been empowered in such a powerful manner.

Technologies involving robotics and artificial intelligence, stem cell research, renewable energy generation and storage, augmented reality, and space travel. space tourism and space mining, nanotechnology, and anti-matter, to name a few, are beginning to play a greater role in our lives.

As regards Defence technology, the nation is focusing hard on the development of advanced systems for our armed forces. We have put in appreciable efforts in the field of basic and applied

research for indigenization of technologies. The outstanding achievements of our nation in missile and space technologies reflect our inherent S&T strengths. The success of Geo-Synchronous Launch Vehicles, the Agni Series of Missiles, the nuclear submarine INS Arihant, fighter aircraft and the Chandrayaan and Mangalyaan missions have propelled us into an elite club of nations possessing 'niche' technologies.

Defence R&D has evolved over the years, capable of delivering strategic missile systems, Electronic Warfare, Electronics, Naval and complex platforms such as Light Combat Aircraft. India is today one of only 5 nations with ICBM capability, one of the 4 countries in the world to have a multi-level strategic deterrence capability, one of only 5 countries of the world to have its own BMD program and underwater missile launch capability, one of only 7 countries to have developed its own Main Battle Tank & an indigenous 4th generation Combat aircraft, one of 6 countries of the world to have developed a nuclear-powered submarine, one of select few countries of the world to have its own Electronic warfare & multi Range radar program.

As spin-offs, efforts in Defence R&D have led to the development of Bulletproof jackets, breathing systems, farming in high altitude areas, Dengue, Chikungunya, multi-insect repellent, and food poison detection kits which have been put to use. In the field of Nuclear Biological and Chemical technologies, a large number of DRDO systems including Reconnaissance vehicles, and dosimeters are in use. Bio-digesters for human waste management primarily developed glaciers have found their potential in the civilian sectors and have become a significant part of the Swachh Bharat movement.

The Government of India has embarked on a very important programme 'Aatmanirbhar Bharat', which, in the technology sphere, encourages the design, development and production of state-of-the-art systems within India, thereby enhancing in-house capability, and reducing dependence on external sources. This programme is helping to boost the country's exports and thereby the growth of our economy. This programme requires R&D institutes, academia and industry to work hand-in-hand and provide quality products and services.

Academic institutes have a significant role to play in the endeavour and become hubs for fostering innovation and entrepreneurship. Collaboration and teamwork are very important for innovation and creativity. Universities need to create dedicated laboratory spaces in collaboration with research institutes to enable students to get valuable experience before they leave the University. Joint programmes must be formulated with other academic institutions and research organizations to propel research in niche areas.

Students and teachers must be encouraged to work for a minimum specified time in research institutes in both the Government and Private sectors, to get hands-on experience with the state-of-the-art equipment and facilities. Focus must be laid on setting up incubation, innovation, and research centres within the campus. Proper mentoring by experts as and when needed must be provided.

Students can be groomed to take up interesting, innovative projects that will have the potential to provide technological breakthroughs. Providing the required facilities and guidance will surely help them achieve breakthrough solutions.

Focus is to be made on futuristic technologies to become a future world leader. From nurturing and working on denied technologies, we need to leapfrog in capability and lead in relevant areas. Establishing focused research centres in the specific technologies at R&D centres and academic institutes with state-of-the-art infrastructure is the first step in that direction. Innovations in Small and Medium Scale industries should be encouraged and supported. The country needs to have innovative manufacturing institutes with public and private partnerships. Also, these technologies must be devised for ultimate exports to earn valuable foreign exchange for the country. Bio-sensors, Photonics, NEMS, MEMS, high energy materials, futuristic power supplies, stealth technologies, advanced materials, and high-power computing are few such identified priority areas.

To encourage and support research in advanced materials, the Government is formulating a National Material Policy. This policy provides a blueprint for harnessing the strengths of the knowledge capital of the nation in relevant areas of material science and putting them to best use for making a strong and technologically superior India of the 21st century.

There exists an immediate need to synergize the capabilities of all stakeholders to foster innovation that would result in the overall development of the nation. R&D institutes should focus more on basic and translational research and the public sector units need to be roped in for development and subsequent production, playing a vital role as lead integrators. The private sector also needs to invest in R&D in specified areas and produce the sub-systems and systems. This will enable such industries to transform their capabilities to the level of lead integrators.

Today, the private sector already started playing a major role. In the last 10 years, the private industries have graduated from mere component producers to the challenging role of developing state-of-the-art sub-systems and systems. For instance, more than 70% of the supplies for the Akash missile system are coming from a conglomerate of private industries. Hence, it is evident that the private industry is going through transformation to handle greater challenges.

Make innovation your mantra.

Understand what the nation needs, learn how to do what the nation needs, and let your deeds bring glory to the country. Provide innovative solutions that will propel our country to the top of the world. Innovate for a stronger India.

I thank NITK for the opportunity to speak to you. My best wishes to all present here today at the 21st Convocation. May the Institute achieve greater success in the years to come.

God bless you!

Jai Hind!!