

C-MMACS Foundation Day Lecture

This year's C-MMACS Foundation Day Lecture (the [fifth in the series](#)) was delivered by Prof C N R Rao on 28 July 2000. Prof Rao spoke on *Nanotubes and nanoparticles*.

It was with some trepidation that one entered the C-MMACS Conference Hall because one knew practically nothing about these nano-things ("nano materials are very small, very strong, very unusual and with counter-intuitive properties", Dr G Prathap, C-MMACS's new Scientist-in-Charge, explained in his opening remarks). But when a gentleman of Prof Rao's stature and eminence agrees to give a talk on your campus, one attends without worrying too much about the title.

"I realise that what I am about to say might be too technical for some of you, but it's nice to listen to rubbish once in a way!", Prof Rao said as he began his lecture.

Almost immediately the much-decorated professor ("the finest chemist that India has ever produced", Dr Prathap said as he welcomed Prof Rao) was on his way. "Let's start 'dividing' metals till they get smaller and smaller .. but don't go right down to the atom -- atoms aren't terribly interesting! -- stop just before in the 1-100 nanometer range. Things here are very interesting and very different .. even gold becomes very reactive, and is therefore not noble any more.."

Prof Rao recalled a naive question which his IIT, Kanpur student asked many years ago: "what is the minimum number of atoms needed 'to make gold metallic'?" ("which was really a wonderfully curious question from the youngster") and then went on to talk about his recent experiments in nanoparticles. The narrative was indeed very technical, with daunting high magnification pictures ("because you can't see these particles with the naked eye") but one marvelled at Prof Rao's remarkable passion and energy, and his unremitting love for science.

The lecture contained asides and observations: about "little research in little labs" becoming a million dollar industry, about the strength of nanotubes, about "borrowing" experiments from nature, how "reading is useful once in a while", why "I never take patents", how serendipity favours the prepared mind, how chemists always carry out more elegant experiments than physicists and about "those foolish things you think of while having coffee".

Earlier the function opened with an invocation, sung wonderfully by Gopal Patra in praise of the Indian soldier, Dr Prathap's welcome and Prof V K Gaur's warm introduction of Prof C N R Rao. Prof Rao released the C-MMACS Annual Report for 1999-2000 and Dr Anand Kumar proposed the vote of thanks. Dr K S Yajnik, who led C-MMACS with distinction for its first eight years, and Dr Goverdhan Mehta, Director, IISc. were also present on the occasion.