


Name (Title): Professor C.N.R. Rao	
Affiliation: Linus Pauling Research Professor	
Address: Jawaharlal Nehru Centre for Advanced Scientific Research Jakkur P.O., Bangalore 560 064 India	
Home Page: http://www.jncasr.ac.in/cnrrao	
Lecture Title: Soft chemistry routes to Nanomaterial	
<p data-bbox="180 763 1114 797">Abstract: Chemical Dimensions of Nanomaterials</p> <p data-bbox="719 831 874 864" style="text-align: center;">C.N.R. Rao</p> <p data-bbox="424 898 1169 965" style="text-align: center;">Jawaharlal Nehru Centre for Advanced Scientific Research Bangalore 560 064, India</p> <p data-bbox="180 999 1414 1570">Chemistry has played a major role in the synthesis and assembly of nanostructures. Thus, nanocrystals of metals, semiconducting chalcogenides and oxides of varying shapes and dimensions have been prepared by employing single-source precursors, solvothermal conditions and other soft chemical routes. A specially interesting innovation is the synthesis of ultrathin nanocrystalline films at the liquid-liquid interface. Nanowires of a variety of exotic inorganic materials have been synthesized recently, and many of them have required the use of ingenious chemistry. It is noteworthy that nanowires of metals, chalcogenides, nitrides and oxides have all been obtained by soft chemical methods, as distinct from the well-known VLS, VS and template methods. In the case of nanotubes, the story is even more interesting. Chemical routes have been successful in the synthesis of carbon nanotubes, including Y-junction nanotubes, but equally importantly, new classes of inorganic nanotubes have been discovered in the last few years. These include nanotubes of metal chalcogenides, oxides and nitrides. Soft chemistry has been useful in the synthesis of nanotubes of inorganic materials such as oxides and sulfates. In this presentation, an overview of the design, synthesis and characterization of novel nanostructures will be provided, based on the work carried out in Bangalore. The presentation will include recent unpublished work using new chemical strategies as well as some applications.</p> <p data-bbox="180 1603 416 1637"><u>Useful References</u></p> <ol data-bbox="228 1671 1414 1973" style="list-style-type: none"> 1. C.N.R. Rao, F.L. Deepak, G. Gundiah and A. Govindaraj, <i>Progress in Solid State Chemistry</i>, 31, 5 (2003). 2. C.N.R. Rao and M. Nath, <i>Inorganic Nanotubes</i>, <i>Dalton Transactions</i>, 1 (2003). 3. C.N.R. Rao, A. Müller and A.K. Cheetham (Eds.), <i>The Chemistry of Nanomaterials</i>, Wiley-VCH, Weinheim, 2004, reprinted 2005. 4. C.N.R. Rao and A. Govindaraj, <i>Nanotubes and Nanowires</i>, Royal Society of Chemistry (London) monograph, 2005. 5. C.N.R. Rao, A. Govindaraj and S.R.C. Vivekchand, <i>Recent results on inorganic nanomaterials</i>, <i>Annual Reports of the Royal Society of Chemistry (London)</i> 2006. 	