

Materials Science Day

This year's CSIR Foundation Day was "Materials Science Day" at NAL. The idea to celebrate NAL's achievements in Materials Science on this special day was interesting and thoughtful; after all it was CSIR's supporting umbrella which made all these successes possible.



The change necessitated a minor modification in the CSIR Foundation Day function format: instead of the customary CSIR Foundation Day and NAL Business Day lectures, we had three special lectures by three of the pillars of NAL's Materials Science Division: Dr A K Singh (who is retiring this week after leading the Division for two decades!), Dr A C Raghuram (who is likely to retire in November 1999) and Dr S R Rajagopalan (who retired from NAL in December 1991 but whose drive and passion for materials makes one wonder if, as Dr Prahlad so wonderfully put it, "he is retired, or are we?"). To cap it all, NAL was honoured when Prof S Ramaseshan, the Division's founding father, agreed to grace this very special occasion.

The setting was therefore perfect for a delightful Sunday morning excursion through NAL's world of materials. Dr A K Singh began the proceedings with a stimulating lecture on "New Materials Development - Challenges" (Dr R V Krishnan -- who takes over as the new Head of the Materials Science Division -- introduced Dr Singh as "the first scientist to be formally recruited for the Division. He specialised in studying the effect of pressure on solids and the work he carried out with George Kennedy at UCLA in the early 1970's has become a classic. In fact he has an equation named in his honour!"). Dr Singh's lecture spoke of the "suddenness with which materials appear on the scene", about the importance of 'processibility' ("unless you can use the material for what you want, it isn't very useful"), about the "very high mortality" of materials ("and yet it makes eminent sense to invest on materials") and about the "lurking danger" -- posed by residual stresses -- in using even known materials for high performance applications. What one truly admired was the intense ardour of a gentleman whose voyages of discovery from "the laboratory to the earth's inner core" are not likely to be curtailed by the trifling inconvenience of turning sixty years old.

Dr Raghuram's lecture on "Role of Failure Analysis in Flight Safety" was a remarkable narrative from a scientist who, as Dr Krishnan pointed out "has created a niche for himself in the area of failure analysis and accident investigation". Dr Raghuram used illustrated examples to explain NAL's many successes in failure analysis, and highlight the critical importance of engineering design. "Sometimes we have to be like Sherlock Holmes as we look for that telltale mark or signature", he said. It was a special pleasure to hear Dr Raghuram talk about NAL's successes in dozens of investigations together with some old-fashioned homilies (e.g. "what cannot be cured has to be endured").

Dr S R Rajagopalan completed the three-part programme with his lecture on "Surface Modification with Nano Materials -- An Emerging Area". Dr Krishnan described Dr Rajagopalan as "an outstanding scientist with an acumen for developing technologies". It is always a great experience to listen to Dr Rajagopalan who described surface modification with nano materials as "an idea starting out as a science". Explaining that the "global economy depends on materials to an extent most non-technical persons do not realise", the speaker expressed some concern at the threat of depletion faced by materials. Fortunately nano technologies (mentioned by Feynman as early as in 1961 when he said "there is much space at the bottom"), with their promise of "smaller is more useful", offer real hope, especially in micro-electronics, Dr Rajagopalan said.

The CSIR Foundation Day function featured the other usual highlights: watches for CSIR colleagues completing 25 years of service, special citations for NAL's recently retired employees and cash awards to children of NAL employees scoring exceptionally high marks in science subjects.

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