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A curious mind illuminated

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Did you know that the spectrograph (an instrument used to split light into its component wavelengths) at the entrance of the Archives and Publications Cell (Office of Communications) at Indian Institute of Science (IISc), Bengaluru has a Nobel connection?

It's a replica of the one used by Sir C V Raman and his student K S Krishnan to observe a phenomenon, now known as Raman Scattering or Raman Effect. It was built by Prof P S Narayanan, Sir C V Raman's last student at IISc.

The Nobel-winning experiments of Sir C V Raman started on the deck of a ship crossing the Mediterranean sea in 1921. He was wonderstruck by the blueness of the sea.

Sir C V Raman found out that the blueness of the sea was not merely due to the reflection of blue light from the sky, but also due to the scattering of light by water molecules. He deduced this using a simple polarising prism (Nicol prism).

This prompted him to study scattering of light by liquids on his return to India using a spectrograph, resulting in the discovery of

Raman Effect, and for this discovery, he won the Nobel Prize in 1930. He was the first Asian to win this prize in the sciences.

So significant was this discovery that, it was one of the earliest evidence of quantum theory.

An exhaustive collection of iridescent objects housed in the museum at Raman Research Institute (RRI), Bengaluru is a testimony to the scientist's curious mind.

These objects from his personal collection ranging from diamonds, quartz, opals, moonstones to butterflies and seashells were studied by Sir Raman for their optical properties.



Iridescent butterflies, a interesting subject for Sir C V Raman.
Photo by S K Dinesh

“The pieces in the museum were carefully selected by Sir C V Raman over several years; they give a glimpse of the appreciation that the discerning professor had for unusual and peculiar manifestations of nature,” says Prof R Subrahmanyam, Director, Raman Research Institute.

So passionate was Sir C V Raman that in 1945, when the Bhadravathi iron ore was shut due to a statewide power outage, he drove all the way to the ores to procure a particular type of rainbow-coloured carborundum stones from the furnace — now a prized possession of the museum.



When the Bhadravathi iron ore was shut due to a statewide power outage, Sir C V Raman drove all the way to the ores to procure a particular type of rainbow-coloured carborundum stones from the furnace. Photo by S K Dinesh

The heliostat in the museum is another testament to his resolute. “As there was no power supply to RRI during its early years, he built a heliostat, which reflected sunlight into his lab to aid him

in research,” says P S Sasikumar, the museum’s curator.



As there was no power supply to Raman Research Institute during its early years, he built a heliostat, which reflected sunlight into his lab to aid him in research. Photo by S K Dinesh

Addition

When Sir Raman was appointed as the first Indian director of IISc, the institute had only four departments: General Chemistry, Organic Chemistry, Biochemistry and Electrical Technology. He set up the Physics Department and for a certain period of time, was its only faculty member.

He also founded the Indian Academy of Sciences for advancement of Indian science. Post retirement from IISc, he privately established Raman Research Institute, where he worked till he breathed his last.

“The institute continues to have a unique place by continuing Sir

Raman's spirit of original research and enquiry, most often with equipment invented and built here and for the problem on hand, while also diversifying and moving on from the classical studies into modern-day frontiers on all scales — from quantum atom optics to cosmology," says Prof Subrahmanyam.

(With inputs from Sharath Ahuja)