

# IISc prof becomes Royal Society fellow

**Express News Service**

**Malleswaram:** Prof Ajay Sood from the Department of Physics at the Indian Institute of Science (IISc) has been elected one of the fellows of The Royal Society.

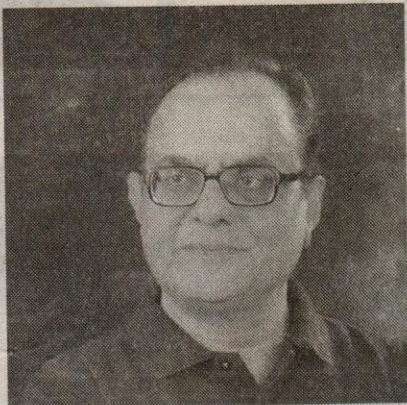
Sood and his team have been working on two broad topics of research within the field of condensed matter. His laboratory aims to primarily understand the physics behind each observed phenomenon before delving into the questions of their commercial applications.

Over the last 15 years, their research in Quantum Condensed Matter has focused on nanomaterials. They have designed Field Effect Transistors (FETs) using materials like carbon nanotubes, graphene, Molybdenum disulphide and black phosphorus and superconductors such as iron pnictides.

They perform Raman spectroscopy on the device, while it is working, in order to study the electron-phonon coupling process. This technique helps them understand and optimise device performance. Additionally, they study the opto-electronic properties of such materials by exciting them with the help of ultrafast (femtosecond) LASERS.

"This method is called 'time-resolved pump probe spectroscopy' which lets us investigate the amount of time optically excited electrical carriers take to return to their ground state. Such analysis can aid, for example, in the design of photovoltaic devices," elaborates Sood.

His latest research interest in Soft Condensed Matter is something he calls "active granular matter," which are asymmetric grains of brass thicker at



Prof Ajay Sood

one end than at the other. When these grains are vibrated vertically on a plate, they move like living objects or "active matter" by exhibiting a cooperative motion that is frequently observed in birds, ants and fish. This provides them with an opportunity to understand the natural phenomenon of "flocking" by studying non-living objects.

Sood's team was the first to show that flocking can be achieved even going beyond nearest neighbour interactions. The team has also recently designed a protein detector that was made from optical fibre Bragg grating.

They have used this device to detect a protein called CRP which is a marker for heart attacks in the human body.

On being elected as a fellow of the Royal Society this year, he said, "I feel happy to be recognised for our work, honoured to be elected, and humbled when I realise that I have been placed in the company of so many geniuses".