



# भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

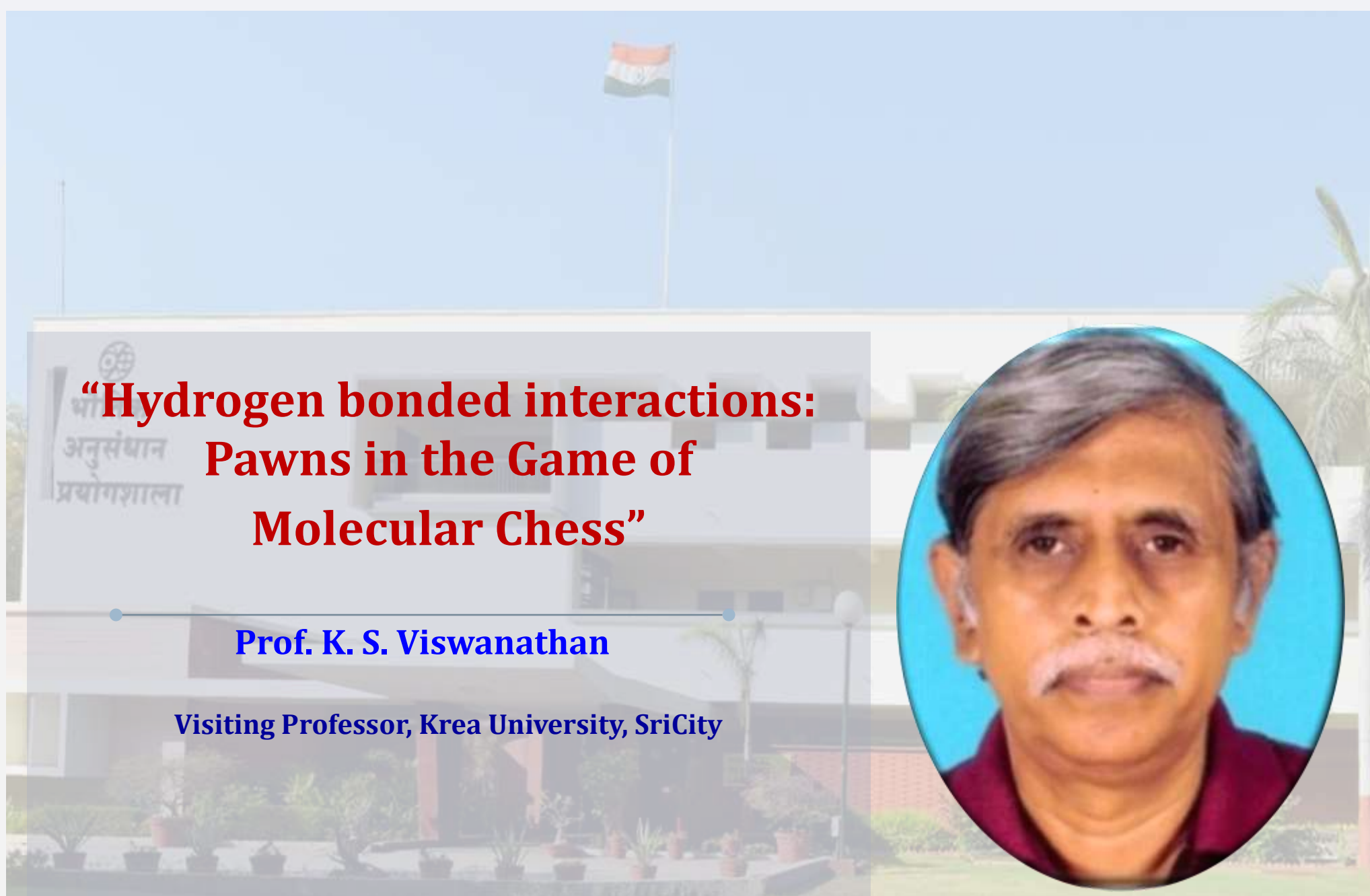
## Physical Research Laboratory, Ahmedabad

<https://www.prl.res.in/prl-eng/prlat75>

**71\_PRL Ka Amrut Vyakhyaan**

**Thursday, 08 December 2022**

**@ 04:00 PM (IST)**



**“Hydrogen bonded interactions:  
Pawns in the Game of  
Molecular Chess”**

**Prof. K. S. Viswanathan**

Visiting Professor, Krea University, SriCity



[https://youtu.be/vWLakbtWB\\_0](https://youtu.be/vWLakbtWB_0)



## **71\_PRL ka Amrut Vyakhyaan**

**Title: “Hydrogen bonded interactions: Pawns in the Game of Molecular Chess”**

**Speaker: Prof. K. S. Viswanathan**

Visiting Professor, Krea University, SriCity

**On Thursday, 08 December 2022**

### **Abstract**

Non-covalent interactions, particularly hydrogen bonded interactions, have been studied over the last many decades, as they have a profound influence on many chemical, physical and biochemical processes. These interactions are very weak and their study has been a challenge. Many cold – molecules techniques have been used for the study of these interactions. We will discuss the use of one of such techniques – matrix isolation infrared spectroscopy corroborated with electronic structure calculations. A few cases based on our studies will be presented to highlight the characteristics of this weak interaction.

### **The Speaker**

Prof. K. S. Viswanathan is a Visiting Professor, Department of Sciences, Krea University, Sri City. He completed BSc and MSc from Vivekananda College, Madras and obtained his PhD degree in Physical Chemistry from the Vanderbilt University, USA. He was Head of Department of Chemical Sciences and Dean at, IISER, Mohali. Prof. Viswanathan's research interest include Matrix isolation IR spectroscopy for the study of conformations, non-covalent interactions, reactions of high temperature species. Fluorescence spectroscopy of lanthanides and actinides. Laser induced breakdown spectroscopy, glow discharge spectroscopy and spectroanalytical methods. He is also involved in Science Education in schools and universities. He has served as member of Board of Governors for various colleges, universities and institutes. Prof. Viswanathan has received several honors and recognitions such as Medal awarded by the Vivekananda College for securing the First Rank in the College in M. Sc. , Medal awarded by the Madras University for securing the First Rank in the University in M. Sc. (Chem), Vanderbilt University Scholarship, September 1979 – June 1983, Kalpakkam Science and Technology Award for the best basic research work in 1999 & 2001 and Indian Spectrophysics Association Award 2010 for contributions in Matrix Isolation & Fluorescence Spectroscopy.



## About PRL

The Physical Research Laboratory (PRL), known as the “cradle of space science” in India, is one



of the premier research institutes founded in 1947 by Prof. Vikram Sarabhai, a renowned Cosmic Ray Scientist, a great visionary and institution builder. PRL played a seminal role in producing a highly motivated cadre of space scientists and the technologists of highest international repute. The first scientific rocket launched from Thumba on 21st November-1963 and many other rockets launched thereafter contained payloads developed at PRL. Dr. Sarabhai initiated many of these scientific and technical activities at PRL which eventually led to the formation of the Indian Space Research Organization (ISRO). Therefore, PRL is known as the “cradle of space science” in India. Further, the research in the area

of Plasma Physics expanded to the formation of the Institute of Plasma Research (IPR).

As an institution PRL is unique in that it conducts fundamental research in a wide range of research areas from the Earth to the cosmos, and comprising Astronomy and Astrophysics; Solar Physics; Space and Atmospheric Sciences; Theoretical Physics; Geosciences; Atomic, Molecular and Optical Physics, Astrochemistry; and Planetary Sciences and Space Exploration. PRL is one of the rare research institutes of international repute wherein research in such diverse fields of sciences is carried out using several state-of-the-art experimental facilities that exist under one umbrella.

Along with the ongoing research, several new initiatives have been taken up during the last few years. The Multi-Application Solar Telescope (MAST) at Udaipur Solar Observatory has been operationalized. PRL initiated scientific programmes in frontier areas of research, which include a search for exo-planets, laboratory studies of interstellar grains, laboratory synthesis of cold astro-molecules and experimental studies in the field of quantum optics. PRL is also developing several scientific payloads as a part of ISRO’s larger vision and contributing to roadmap for competitive scientific exploration of the solar system and beyond. In particular, PRL has been contributing significantly not only in building instruments for space missions, such as Chandrayaan-1, Chandrayaan-2, AstroSat and upcoming Aditya-L1, Chandrayaan-3 and planetary and space missions, but also by bringing out new and insightful science results.

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