Mapana – Journal of Sciences
2021, Vol. 20, No. 4, *v-vii*
ISSN 0975-3303/https://doi.org/10.12723/mjs.59.0

Editorial

It is indeed a great pleasure and honor for me to present the current issue of Mapana Journal of Sciences. Mapana is a multi-disciplinary UGC care listed journal dedicated to publishing original and innovative research and review articles in the discipline of science. Mapana provides authors a platform to publish note-worthy research articles in the field of physical sciences, chemical sciences, mathematics, computer science, and life sciences.

In the present issue, we are publishing five articles pertaining to theoretical physics, astrophysics and nanomaterials, which discuss the novelty and advancements of the respective field. We sincerely appreciate and acknowledge all the authors for their valuable contributions to the Mapana Journal of Sciences.

The microcanonical ensemble (MCE) represents an isolated system having fixed energy. The nature of energy in MCE is always a subject of discussion. In the article, "Defining 'energy' in micro canonical ensemble," Prasanth and Udayanandan distinguish the energy possessed and offered by the system for measurement in MCE. We hope this will help the learners of statistical mechanics to have a greater understanding of MCE. They have made a clear distinction between the input and output energies in MCE with suitable examples. It is shown that the input energy is always independent of temperature, wherein the output energy will be a function of temperature and input energy parameters.

Through years of hard work by numerous astronomers, scientists, and technicians, spectroscopy has emerged to be a powerful tool for understanding the true nature of stars. Gaurav Banerjee provides an understanding of how the exciting field of spectroscopy - the language of stars – gradually developed and helped humanity to gain a good understanding of stars and astronomy as a whole. Spectroscopy of stars reveals something extremely important about the universe we live in. It can be regarded as the ultimate form of remote sensing. The article intends to provide motivation to young students who dream of pursuing research in the exciting field of astronomy.

Over time, pre-main-sequence (PMS) stars evolve into main-sequence (MS) stars. Stars evolving from PMS to MS phase is a significant subject of research that aims to provide a better understanding of stellar phases and their properties. Existing literature shows a lack of study about the stars in between the PMS and MS phase. Suman and Co-authors focused on what belongs in the midst of these two phases. Classical Be(CBe) and Herbig Ae/Be (HAeBe) stars, corresponding to MS and PMS phases, are two well-known categories of emission-line stars. Through optical and infrared photometric analysis of a sample of 2167 CBe and 225HAeBe stars, the study report 98 such rare stars which are in transition between PMS and MS phase. These rare stars are termed as 'Transition Phase' (TP). The article is a detailed study of TP candidates, which will motivate the community of emission-line star research about the significant need of detecting and studying TP candidates in more detail.

One of the most distinctive inventions in the world of nanotechnology is the carbon nanotube (CNT). Many scholars around the world have been studying carbon nanotubes (CNTs) over the past two decades due to their enormous potential in a variety of sectors. Carbon nanotubes can be changed or functionalized to make them easier to work with. This increases their water solubility, allowing them to easily permeate tissues. These qualities have allowed carbon nanotubes to be used in medicine. They have the potential to be used in a variety of medical settings. The encapsulation of additional materials in carbon nanotubes will expand the scope of carbon nanotube applications in medicine. Shiva Prasad and the group made an elaborate review of the important physico-chemical properties as well as different applications of CNTs. CNTs' well-known features were also examined and presented, leading to the conclusion that CNTs have a unique collection of electrical, mechanical, and thermal capabilities.

In the review article titled Exploration of Graphene Layers in Various Carbon Materials by Raman Spectroscopic Technique, Jelby et al. discussed the role of Micro Raman in characterizing few-layer graphenes from different carbon samples originating from hydrocarbon and agricultural derivatives. This review details

information regarding different types of defects that can be analyzed using Raman spectroscopy. Analysis of the Raman spectrum of graphitic structures gives insight into its structural arrangements, defects, and degree of disorder. The spectral analysis justified the presence of five bands in the first-order spectral region after curve fitting. The second-order Raman spectrum gives information about the number of layers in several soot materials derived from various precursors.

We are delighted to proclaim that the articles are of social relevance and have implemented novel thoughts. Let this journey in pursuit of knowledge be an enriching experience for all the readers.

Manoj Balachandran
Editor