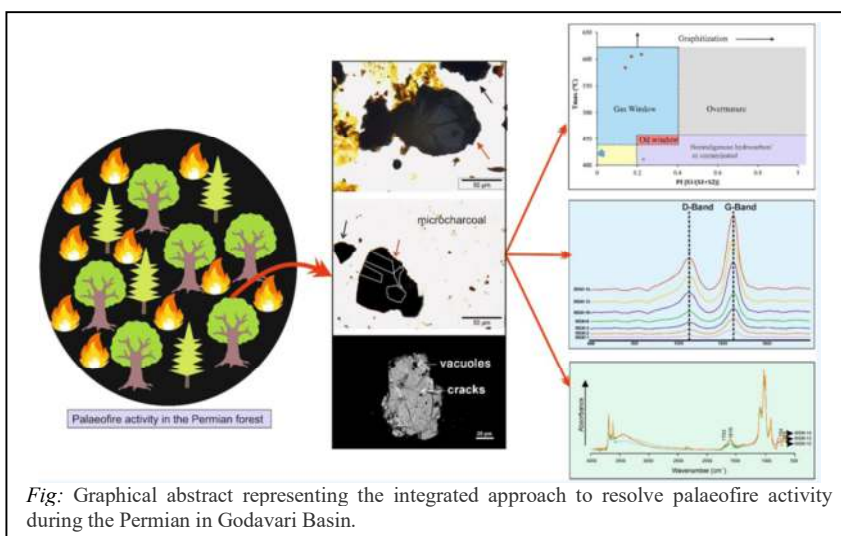


Significant Development / Achievement (May 2025)

A study conducted a comprehensive palynofacies and geochemical analysis to characterize organic matter (OM) in shale samples from the Godavari Basin. Palynofacies analysis identified three types of organic matter under transmitted light: translucent organic matter (TrOM), comprising palynomorphs, structured phytoclasts, and degraded organic matter; and two types of opaque phytoclasts/charcoal (CH), distinguished as palaeofire-induced (PALCH) and oxidized (OX-CH). A multifaceted



approach was applied through Raman spectroscopy, Rock-Eval, and Fourier transform infrared spectroscopy (FTIR) to assess organic carbon's thermal evolution and structural integrity required to substantiate the palynological evidence on microcharcoal. The intensity ratio (ID/IG) ranged from 0.20 to 0.47, indicating varying impacts of thermal events on carbon structures. Higher ID/IG ratios corresponded with samples affected by palaeofires. Additionally, D-FWHM and GFWHM parameters were analyzed, revealing larger D-FWHM values in thermally matured samples, indicating greater disorder in the carbon structure. The D-FWHM/G-FWHM ratio, exceeding unity, suggested significant structural shifts toward disordered carbon domains. Consequently, the presence of overmaturation of organic matter ranging from 411 to 609 °C indicates the alteration of organic matter due to the impact of heat causing the removal of hydrogen from the samples. FTIR spectroscopy suggested the presence of aromatic and aliphatic deformation due to thermal maturation. This integrated approach combining palaeofire history, Raman spectroscopy, and geochemical analysis provided valuable insights into the palaeofire history and structural evolution of charcoal in the Godavari Basin shales (Aggarwal et al., 2025; PIB-6th May 2025).



One Day Brainstorming session was organised at Patanjali Research Foundation, Haridwar to conceptualise the “Museum of Origins and Continuum - A Journey of India’s Land, Life, and Legacy” (May 6, 2025): The session brought together Birbal Sahni Institute of Palaeosciences (BSIP), Patanjali Research Foundation Trust (PRFT) and University of Patanjali (UOP). This collaboration reflects a powerful fusion of science, spirituality and heritage.

A Seminar on "*Automated recognition of palynological records from sediments via multispectral imaging flow cytometry*" (May 2, 2025): Dr. Subhadeep Mukherjee from BD Biosciences delivered a talk on "Real time Image-enabled Spectral Flow Cytometry based cell sorting enables a range of novel flow cytometry applications" during the event at BSIP.

As per the directive of Ministry of Jal Shakti and Department of Science & Technology, GOI, BSIP celebrated Swachhata Pakhwada during 1st to 15th May 2025.

BSIP Scientist Dr Swati Tripathi received INSA Young Associate (IYA) Award for the year 2025.

A total of 4 Research Papers were published during the month in high-impact factor journals.