

Report

73rd ANNUAL MEETING & SYMPOSIUM OF THE INTERNATIONAL COMMITTEE FOR COAL & ORGANIC PETROLOGY (ICCP 2022)

September 18–25, 2022

THE 73rd Annual Meeting & Symposium of The International Committee for Coal & Organic Petrology (ICCP 2022) is one of the prime meetings of the coal petrologists around the globe. It is held annually and for the second time in India at Vigyan Bhawan & NASC, New Delhi after the meeting held at Kolkata in 2015.

ICCP is one of the premier bodies focusing on basic research on petrographic entities of coal and organic matters. For around seven decades it has been organizing different activities on basic research on coal petrography involving the talented petrographers from across the globe. One of the

main activities of the ICCP is the constitution of different commissions/working groups on various themes/topical issues on basic and applied aspects of coal petrography. The expert members of the working groups through rigorous exercises of round robin tests evolve the standardized procedures on various themes, which on finalization in its Council Meetings/General Body are recommended to different standardization bodies like International Organization for Standardization (ISO), American Society for Testing & Material (ASTM), etc. It arranges Accreditation Programmes to create a pool of accredited coal petrographers and provides trainings on basic and applied aspects of coal petrography at different places. It also arranges geological field trips on fossil fuel exploration environmental aspects.

This year the meeting was hosted by Central Institute of Mining & Fuel Research, Dhanbad. The sessions were conducted in hybrid mode with attendees from various research institute of India and abroad. The meeting was



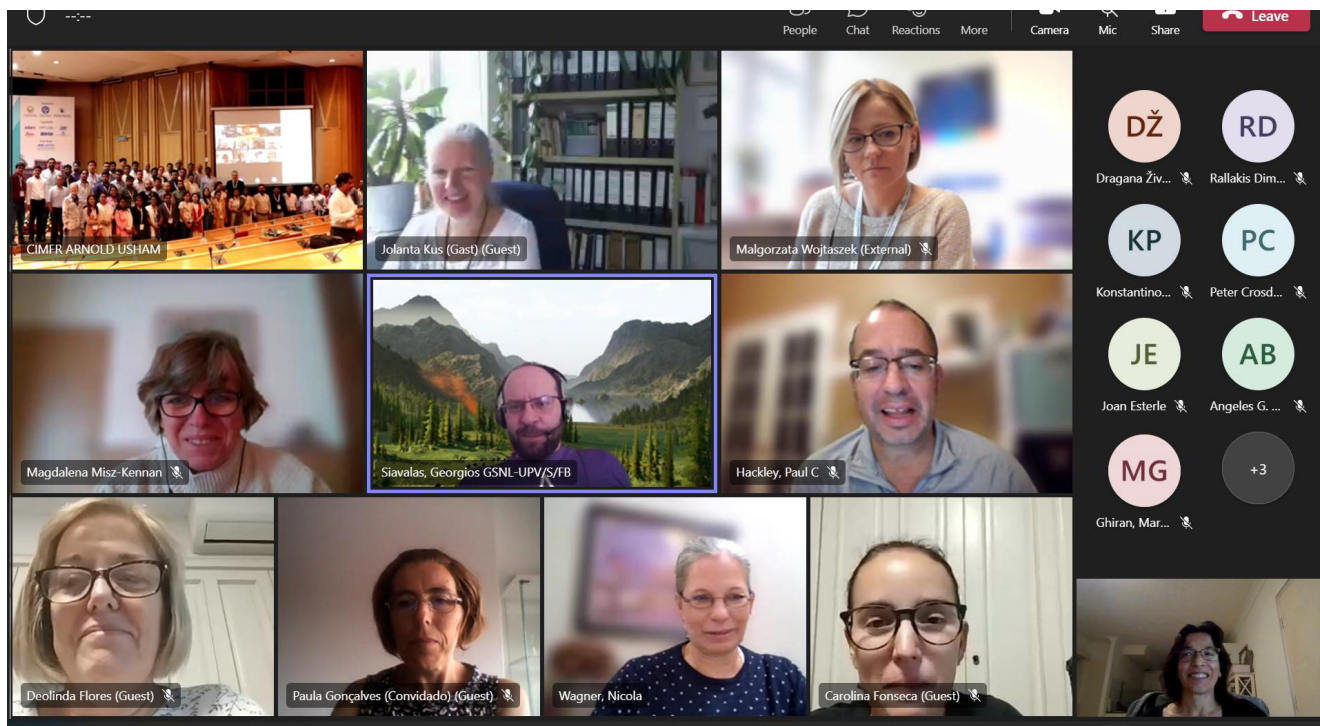
attended by around 120 participants on coal petrology and related backgrounds across the world. The event commenced with the ICCP Council Meetings on 18th November 2022 and attended only by the ICCP council members. From Day 2 to Day 5 various Commission Meetings took place which are as follows.

ICCP Commission Meeting (Day 2) commenced with the inauguration function. Dignitaries graced the dais included Dr. Suddhasatwa Basu (Director, CIMFR, Dhanbad), Dr. Peter Crosdale (Energy Resources Consulting, Australia) Dr. Ashok Singh (Organizing Secretary, ICCP 2022 & Chief Scientist, CIMFR, Dhanbad) and Mr. J.K. Singh (Chief Scientist, CIMFR, Dhanbad). More significantly, two renowned women scientists also graced the dais with their presence, Dr. M. Ángeles Gómez Borrego (Instituto Nacional del Carbón, Spain) as Chief Guest and Dr. Vandana Prasad (Director, BSIP, Lucknow) as the Guest of Honour. Dr. M. Ángeles Gómez Borrego, in her speech emphasized the various activities and contributions of ICCP to coal science. She also remembered eminent women scientists in the field of coal geology who were excellent contributors during the initial days of coal science. Dr. Vandana Prasad in her speech briefed the importance of palaeobotanical research, its recent developments and the role of BSIP in nurturing fossil fuel research in the country. She also emphasized about the works done by late Prof. Birbal Sahni and his contributions in building this research branch in the country. The committee paid tribute and remembered Dr. Walter Pickel, a widely recognized organic petrologist and

an active member of ICCP, also a Thiessen Medalists, who passed away 3rd June 2022.

ICCP Commission Meeting (Day 3) had full of discussions around the Commission I working groups. Also had a virtual microscope session and lot of discussion on maceral 'suberinite'. ICCP Commission Meeting (Day 4) was filled with the presentations from Commission III that is focus on technological and environmental applications and how can optical methods assist on that. ICCP Commission Meeting (Day 5) was filled with Commission II activities. This commission is focused on the application of different techniques for the characterization of dispersed organic matter in sediments. From BSIP, Lucknow, Dr. Runcie Paul Mathews along with student Ms. Rimpay Chetia and Mr. Ishwar Chandra Rahi attended the ICCP commission meetings. Several talks were delivered by various working groups on various aspects related to analysis, application, utilization, etc. of coal. Further discussions and practical sessions including microscopic slide analysis were extremely informative. A new working group was also proposed on organic geochemistry involving scientists from institutes including IIT Bombay, IIT (ISM) Dhanbad and BSIP Lucknow.

The Plenary Session was arranged on the morning of 23rd September 2022 at Vigyan Bhavan, New Delhi with the presence of Dr N Kalaiselvi DG, CSIR as the Chief Guest, Dr. Dirk Prinz (Germany) and Prof. Joan Esterle (The University of Queensland, Australia) as Guests of Honour. The occasion was also graced by Dr. Suddhasatwa Basu (Director, CIMFR, Dhanbad), Dr. Ashok Singh (Organizing Secretary, ICCP



2022) and Mr. J.K. Singh (Chief Scientist, CIMFR Dhanbad). Dr. Kalaiselvi emphasized on the recent developments of India in R & D sector and how CSIR and CIMFR is catering the R & D sector of the country. Prof. Joan Esterlie and Dr. Dirk Prinz mentioned about the achievements of ICCP and the programs conducted the whole year and about the future programs. The Plenary Session concluded with the vote of thanks given by Mr. J.K. Singh.

Post Plenary Session, the technical sessions of the one day symposium took place on the main theme “Recent trends on coal utilization for sustainable development and energy security”. The symposium focused on the application of advanced and emerging coal characterization techniques including coal petrography for different industrial uses including steel and power sectors. 48 presentations were delivered on the subthemes from relevant sectors including organic petrology and coal geology for technological applications in various industries; Automated/advanced techniques in organic petrology of coal, lignite, coal biomass pellets, dispersed organic matter, coal dust particles, coke, natural coke, char and oil shale; Physico-chemical and mineralogical characterization of lignite, coal, coke, char and natural coke, etc; Blending of coal including biomass for industrial utilization and future technology; Recent advancement in coal preparation, coal carbonization, coal combustion, gasification coal to liquid and environmental aspects; Utilization and characterization of CBM, UCG, shale gas, fly ash, coal char, etc; Recent developments in clean and sustainable mining, clean coal technology and coal to hydrogen energy.

Many distinguished coal petrographers presented their recent research including Prof. Polla Khanaqa (KISSR, Iraq) who explained the knowledge of degradation of plant remnants during peat formation in mesotrophic and oligotrophic peatlands of Germany. Dr. Paula Alexandra Goncalves (Universidade do Porto, Portugal) presented the paper on palynofacies and organic geochemistry of the Permo-Jurassic organic matter in Cribas Anticline to determine the potential hydrocarbons source rocks regions of Timor-Leste. Dr. Carolina Fonseca (University of Minho, Portugal) described

about Choanoflagellates, their evolution, occurrences, and their optical-morphological characteristics. Dr. Peter Crosdale (Energy Resources Consulting, Australia) displayed oral presentation on the relationships between mean maximum and mean random reflectance of Graptolites to provide a reliable indicator of the degree of the thermal maturity in the absence of the vitrinite in the lower Paleozoic sedimentary rocks. Prof. Atul K. Varma (IIT/ISM, Dhanbad) presented on the spectral probe on thermal maturity and rheology of bituminous coals from nitrogen geochemistry of Jharia Basin. Dr. P.D. Chavan (CIMFR, Dhanbad) presented the industrial aspect of the Indian coal gasification status, strategy and way forward. Dr. Saswati Chakladar (NML, Jemshedpur) presented the beneficiation aspects of Indian coals using Oil Agglomeration, its strength and weaknesses and also focused on the commercial implementation of it to produce clean coal at plant scale. Dr. Bodhisattva Hazra (CIMFR, Dhanbad) presented on the critical considerations and insights from Rock-Eval S2 and S4 curves for characterizing unconventional petroleum systems.

Lectures were delivered by Dr. Runcie Paul Mathews and Ms. Rimpay Chetia (BSIP, Lucknow) during oral session highlighting the importance of multiproxy studies in the characterization of organic matter to understand the source of the organic matter, hydrological conditions, depositional environment, climatic conditions and the application of geochemical proxies such as fourier transform infrared spectrometry (FT-IR) in conjugation with microscopic studies.

Application of sophisticated techniques such as 2D-gas chromatography coupled with time-of-flight mass spectrometry (GC x GC-TOFMS) in studying coal lithotypes was described by Dr. Shantanu Ghosh (IIT Bombay). Mr. Nilotpol Bhuyan (NEIST) presented on Acid Mine drainage mitigation aspects. Dr. Sanjyukta De presented on shale gas exploration aspects and its potentiality.

Poster Session organized along with the Oral Session also witnessed huge participation from various R&D organizations including CIMFR, IIT Bombay, BSIP, BHU, NML, NEIST, Panjab University, etc. Challenging topics



discussed includes beneficiation of coal, metallurgical uses of coal, elements in coal byproducts, behaviour of coking coal, carbon nanomaterial synthesis from coal, petcoke gasification, fuel quality improvement, geochemical and microscopic studies, etc.

Scientists and research scholars from BSIP also participated in this session. Dr. Neha Aggarwal presented a study showing palynology as a tool in recognition of misfit/interrupted chronology in coal and coal-bearing horizons in Indian Gondwana sequences. Dr. Divya Mishra and Mr. Ishwar Chandra Rahi presented posters providing information on importance of rare earth elements (REE) to discern the depositional conditions affected the palaeomires. Mr. Suraj Kumar presented the petrographic composition, the quantitative relationships between different petrographical indices and pollen assemblages suggesting the depositional conditions.

The Annual Meeting and Symposium came to an end with the concluding remarks given by Dr. A.K. Singh (Chief Scientist, CIMFR, Dhanbad) in his brief speech. The ICCP

Annual Meeting and Symposium thus provided an immense opportunity for the young, aspiring researchers and scientist in the field of coal geology and allied disciplines to interact with eminent scientists across the world present their research. It also added up a handful of opportunity to create network with contemporaries all around the world working on various aspects of coal science.

Post-meeting, a cultural program was also organized to entertain the guests. Performances including classical dances, folk dances, and musical events were organized by professionals. Two days field trip was also conducted to Dadri NTPC thermal power plant post-meeting from 24th–25th September 2022.

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