

Report on
National Webinar on Recent Advances in Solid State
Chemistry and Allied Sciences

Jointly organized by
Department of Chemistry, School of Physical Sciences
Central University of Kerala (CU-Kerala)
In association with
Association of Chemistry Teacher (ACT) &
Indian Solid State Chemistry and Allied Scientist (ISCAS)
16-17th August 2021

Two-day national webinar on Recent Advances in Solid State Chemistry and Allied Sciences was conducted by the Department Of Chemistry, School of Physical Sciences, the Central University of Kerala In association with the Association of Chemistry Teachers (ACT) and Indian Association of Solid State Chemistry and Allied Scientists (ISCAS) on 16th and 17th August 2021. About 200 research scholars, scientist, college teachers from all over India has participated. The program started with the university anthem. Prof. (Dr.) A. Sakthivel, the organizing Convenor of the webinar, gave the program's welcome address and introductory remarks. Prof. (Dr.) Dr. M. R. Prathapachandra Kurup, Dean, School of Physical Sciences, Central University of Kerala, inaugurated the webinar. Prof. M. Swaminathan, President, ISCAS, gave the presidential address. Prof. Brijesh Pare, President, Association of Chemistry Teachers (ACT), and Prof. D.V. Prabhu, General Secretary, ACT, gave the felicitation. Dr. M.Bhagiyalakshmi, Co-Convenor, expressed the vote of thanks. The lecture session started with a keynote lecture of Prof. Dr. A. K. Tyagi, FRSC, FNASc, FASc, Associate Director, Chemistry Group, BARC-Mumbai. He delivered the lecture on the topic 'Pyrochlore based functional

materials: Rich examples of structure-driven properties.' In his talk, he discussed the structure and catalytic application of pyrochlore-based materials. The next keynote lecture was given by Prof. (Dr.) A. K. Ganguli (Deputy Director, IIT-Delhi, Professor, Department of Chemistry, & Department of Materials Science & Engineering, IIT-Delhi) on the topic 'Complex metal chalcogenide-based superconducting solids'. He explained superconductors, Bismuth sulfur, and Bismuth selenium materials. Technical session 3 was given by Prof. (Dr.) S. Sampath (Professor, Department of Inorganic & Physical Chemistry, IISc-Bangalore) on the topic 'Solid State Electrolytes'. He enlightened the session with electrolyte materials. The afternoon session started at 2.00 pm with the oral presentation of participants. There were two parallel sessions of oral presentation. One of the sessions was on the topic of adsorption and membrane chemistry judged by Dr. Bhagiyalaksmi and Dr. Shanbhag. Another oral presentation session was on the theoretical aspects of solid-state chemistry, judged by Dr. Deepa Janardhanan and Naveen Kulkarni. The next keynote lecture was on 'Solar Energy Conversion through Photocatalysis with specially designed nanomaterials' by Dr. C. S. Gopinath (Head, Catalysis Division, NCL Pune). He explained photocatalyst materials that can generate hydrogen through a water-splitting reaction. An invited talk by Dr. Swapna Nair followed the session, Department of Physics, the Central University of Kerala on the topic 'Nano energy harvesters for next-generation implantable sensors.' She explained about the nanosensors, nano energy harvesters, and implantable sensors. The third oral presentation session was conducted from 05:30 to 7:00 pm under organic and inorganic materials. Dr. Bini George and Dr. Yamuna judged the oral presentation.

The second day of the webinar started with the lecture given by Prof. Ajayan Vinu, Global Innovation Chair Professor and Director, the University of Newcastle, Australia, on the topic 'Functionalized Nanocarbon Based Materials for Energy and Environmental Applications. He started the presentation by explaining various opportunities and infrastructure facilities that are available in his institution. He discussed clearly how the carbon-nitrogen framework is useful to harvest energy. Prof. P Ramasami gave the second lecture, Department of Chemistry, the University of Mauritius on Computational Chemistry Methods as Applied to Solid State. He explained very well on various computational methods. The next lecture was given by Prof. P. Selvam, who delivered a talk on 'The Principle and practice of the Solid State Chemistry. He explained the basics of solid-state chemistry. He stressed the importance of understanding solid-

state chemistry. To understand the nanomaterials, we need to know the solid-state chemistry thoroughly. He interacted with the participants in an excellent manner. After his lecture, the afternoon session started with the oral presentation by the participants. Dr. Ravikumar and Dr. N. Raman acted as judges for the fourth session of oral presentations under catalyst materials and photocatalyst materials.

After the oral presentations, two lectures were invited by Dr. Vijay Shankar, Lead Scientist, Reliance Industries Limited, R & D, Mumbai, and Prof. M. V. Reddy, Institute of Research Hydro-Quebec, Canada. Prof. Vijay Shankar delivered a lecture on 'Recent Advances in Microscopy for Solid-State Materials.' He explained the basics and working of Electron Microscope, Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM), etc. He showed different instruments and explained the principles behind them. Prof. M. V. Reddy gave a talk on Recent Advances on Materials for Energy Storage and Conversion in an interesting way. He explained the working of different fuel cells and batteries. His explanation of the working mechanism of different fuel cells and batteries was very useful and innovative.

The valedictory function started at 5 pm. Prof. M. Swaminathan, President of ISCAS, and Prof. M.R. Prathapchandra Kurup gave their remarks about the two-day webinar. They gave their feedback very well and commented positively about the webinar. The faculty members of the Central University of Kerala, Dr. Ravikumar, Dr. Bhaghiyalakshmi, and Dr. Bini George, gave their feedbacks. After that, the participants also gave feedback. Dr. Bhaghiyalakshmi announced the six best oral presentations. Finally, a Vote of thanks and concluding remarks were expressed by Prof. (Dr.) A. Sakthivel, Professor & Head, Department of Chemistry, CUK, convenor of the webinar.