This conference will focus on non-equilibrium processes of inorganic materials that contribute to the synthesis of new functions and new materials while reducing resource and environmental burdens, and their applications, and will also discuss the elucidation of physicochemical phenomena that enable these processes. These are believed to contribute to the practice of engineering that contributes to carbon neutrality and the circular economy, and aim to provide a long-term vision for the scientific and technological foundations for accelerating the development of advanced ceramic technologies and manufacturing processes.

Specifically, we will focus on methods that can realize new functions while considering resource procurement and reducing environmental burdens, such as lowering process temperatures through non-thermal equilibrium processes, expressing rare element replacement functions through microstructure and interface control, and imparting self-repair functions. For example, we will discuss new coating technologies such as aerosol deposition and nanosheet methods, which are attracting attention as room-temperature ceramic processes, and new bulk processes using cold sintering methods and mechanochemical and biochemical reaction processes.

Finally, the conference will conclude with a panel discussion featuring prominent researchers and engineers from academia and industry who have successfully developed new processes and implemented them in society, to discuss the future direction of process research in the field of ceramics from an international perspective.

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