**Exploring the Future of Energy Storage: Research Trends in All-Solid-State Batteries with Composite Solid Electrolytes**

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The ever-increasing demand for safer, more efficient, and higher-capacity energy storage solutions has been driven by the rapid growth of portable electronic devices and electric vehicles. All-solid-state batteries (ASSBs) have emerged as a promising alternative to conventional lithium-ion batteries, offering higher energy densities, enhanced safety, and extended cycle life. In this talk, we will proudly share our research group's notable contributions to the field of ASSBs at Chonnam National University, emphasizing our groundbreaking work on composite solid electrolytes.

We will begin with a brief overview of ASSBs, highlighting their potential advantages and inherent challenges. Subsequently, we will explore the crucial role of composite solid electrolytes in improving ionic conductivity, mechanical properties, and interfacial stability in ASSBs. Our group's innovative strategies, encompassing the integration of inorganic and organic materials, as well as the development of novel nanostructures and designs, will be thoroughly discussed.

By reviewing our group's key studies and accomplishments, we will demonstrate the impact of our composite solid electrolytes on ASSB performance, addressing critical parameters such as energy density, power density, and cycling stability. Additionally, we will share our current research endeavors and future research directions, underscoring the significance of ongoing innovation in material design and fabrication techniques to unlock the full potential of ASSBs and revolutionize the energy storage landscape.