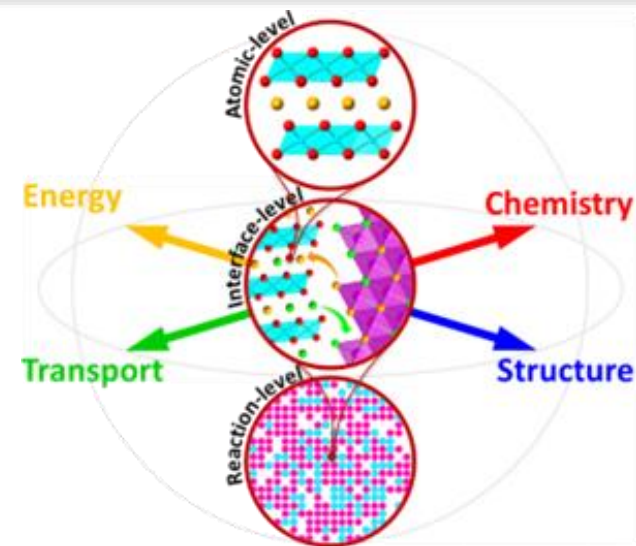


A Next Generation Synthesis Center (GENESIS)

John Parise (Stony Brook University); Class: 2018-2024

MISSION: To elucidate how key structural and chemical transformations are governed by the flow of energy and atoms across multiple length scales, and to enable precision synthesis of targeted new materials by integrating advanced in situ diagnostics and data science tools to interrogate and predict non-equilibrium synthesis pathways.



<https://www.stonybrook.edu/genesis/>

RESEARCH PLAN

Our aim is to control precise materials synthesis at 1) the atomic scale, requiring control of atomic configurations, composition, structural defects and impurities, which are governed by the relative mobilities of species and the relative energetics of competing structural phases, and 2) at the mesoscale (interfacial, particle- and reaction-scales), by controlling collective effects, including chemical microenvironments, relative kinetics in transport-limited reaction architectures, heterogeneity, compositional gradients, and microstructure.



U.S. DEPARTMENT OF
ENERGY

Office of
Science



A NEXT **GENERATION**
SYNTHESIS CENTER