

Abstract Submitted
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Synthesis, Microstructure and Bulk Properties of Complex Nasicon-Type Ceramics¹ KRISTINA LIPINSKA, OLIVER HEMMERS, JULIEN ROMANN, Harry Reid Center for Environmental Studies, University of Nevada Las Vegas, NV, USA, STANISLAV SINOGEIKIN, Geophysical Lab, Carnegie Institution of Washington, Washington, DC, USA, PATRICIA KALITA, HiPSEC & Dept.of Physics, University of Nevada Las Vegas, Las Vegas, NV, USA, SHEKAR BALAGOPAL, ANTHONY NICKENS, CERAMATEC Inc. Salt Lake City, UT, USA — Fast ion-conductors from the NASICON family ($\text{Na}_{1+x}\text{Zr}_2\text{Si}_x\text{P}_{3-x}\text{O}_{12}$) have been the subject of extensive research due to their use in electrochemical devices such as batteries, fuel cells, thermoelectric generators and chemical sensors A fabrication challenge for these materials is to maintain long term chemical and physical stability in harsh environments We apply a multi-technique approach to show how partial substitutions with tetravalent and pentavalent cations produce NASICONs with specific morphology and modify the primary to secondary crystalline phase ratios. We use in situ synchrotron x-ray diffraction to investigate pressure-induced structural modifications and compressibility.

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