1. Record Nr. UNISA996279268403316

Titolo	Global Humanitarian Technology Conference (GHTC), 2015 IEEE
Pubbl/distr/stampa	IEEE
ISBN	1-4673-6561-0
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia

2. Record Nr. UNINA9910346755903321

Autore	Jeff Sakamoto
Titolo	Fast Ionic Conductors and Solid-Solid Interfaces Designed for Next Generation Solid-State Batteries
Pubbl/distr/stampa	Frontiers Media SA, 2018
Descrizione fisica	1 online resource (136 p.)
Collana	Frontiers Research Topics
Soggetti	History of engineering and technology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	The EV Everywhere Grand Challenge requires a breakthrough in energy storage technology. State-of-the-art Li-ion technology is currently used in low volume production plug-in hybrid and niche high performance vehicles; however, the widespread adoption of electrified powertrains requires a four-fold increase in performance, 25% lower cost, and safer batteries without the possibility of combustion. One approach for this target is to develop solid-state batteries (SSBs) offering improved performance, reduced peripheral mass, and unprecedented safety. SSB could offer higher energy density, by enabling new cell designs, such as bipolar stacking, leading to reduced peripheral mass and volume. To enable SSBs, a crucial requirement is a

fast-ion conducting solid electrolyte. To date, myriad solid-state electrolytes have been reported exhibiting Li ion conductivities approaching those of today's liquid electrolyte membranes. Moreover, several new materials are reported to have wide electrochemical window and single-ion mobility. Leveraging decades of research focused on Li-based electrodes for Li-ion batteries, the discovery of new solid-state electrolytes could enable access to these electrodes; specifically, Li metal and high voltage electrodes (>5V). However, transitioning SSBs from the laboratory to EVs requires answers to fundamental questions such as: (1) how does Li-ion transport through the solid electrolyte / solid electrode interface work? (2) will solid electrolytes enable bulk-scale Li metal anode and high voltage cathodes?, and (3) how will ceramic-based cells be manufactured in large-format battery packs? The purpose of this Research Topic is to provide new insights obtained through the fundamental understanding of materials chemistry, electrochemistry, advanced analysis and computational simulations. We hope these aspects will summarize current challenges and provide opportunities for future research to develop the next generation SSBs.