



Physical Sciences Seminar

Charge Storage and Transport in Mixed Conductors: From Bulk to Interface

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Mixed (ion-electron) conductors are solid materials that conduct both ionic and electronic carriers. As the materials allow for compositional variation, they are essential for energy and information applications. Conventional mixed conductors are single-phase materials that accommodate mass M ($=\text{Li}$, O , etc.) by dissociating M into ion and electron. Recently, a class of composite materials that enables the mass storage occurring at the interface of two inert materials has been developed. Such composites, as they behave like conventional mixed conductors, are termed artificial mixed conductors. This contribution will focus on the fundamentals of artificial mixed conductors, which refers to four aspects of electrochemical interfaces: thermodynamics, kinetics, transport, and mechanics. Besides introducing the theoretical background, it will also highlight recent examples of Li , H_2 , and Ag storage in composite materials. The finding of this study could potentially pave the way for developing mesoscopic mixed conductors that enable tackling the Ragone conflict.

Thursday, January 23, 2020 09:00am - 10:00am

Mondi Seminar Room 2, Central Building



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