東京大学大学院工学系研究科　総合研究機構

結晶界面工学研究室

Crystal Interface Laboratory, The University of Tokyo

Crystal Interface Lab. Seminar Series

“From Pottery to Battery Advanced Ceramic Energy Storage Materials”

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The increase in energy density and power density requirements for lithium-ion batteries leads to continuous research for new electrode materials. Various insertion materials have been proposed as negative electrodes for rechargeable batteries. The highest theoretical capacity can be obtained when using metallic lithium (3862 mAh/g) or elemental silicon forming lithium-rich alloys (3578 mAh/g), however these materials are not commercialized due to safety reasons and rapid capacity fading, respectively. At present, mostly graphitic materials are used due to low price and high reversibility despite relatively low capacity (372 mAh/g), instability during long-time cycling and inadequacy high power applications. Therefore, new materials, which are economically interesting but demonstrate higher capacity, longer lifetime and better high rate capability, are urgently required to meet the technological demands of our future electro mobility and energy storage applications. In this context, novel anode materials based on ceramic nanocomposites comprised of derivatives of ternary SiCN and SiOC systems are discussed and evaluated in terms of their electrochemical performance.

Main meeting room at Institute of Engineering Innovation

工学部総合研究機構９号館１階　大会議室

2019, Oct 3rd (Thu)　14:00～15:30