

論文 / 著書情報
Article / Book Information

題目(和文)	
Title(English)	Development of Novel Preparation Methods of Silica Anode Material for Lithium-ion Batteries
著者(和文)	MolkenovaAnaraBalta
Author(English)	Anara Molkenova
出典(和文)	学位:博士(工学), 学位授与機関:東京工業大学, 報告番号:甲第10030号, 授与年月日:2015年12月31日, 学位の種別:課程博士, 審査員:谷口 泉,伊東 章,久保内 昌敏,多湖 輝興,篠崎 和夫
Citation(English)	Degree:., Conferring organization: Tokyo Institute of Technology, Report number:甲第10030号, Conferred date:2015/12/31, Degree Type:Course doctor, Examiner:,,,,,
学位種別(和文)	博士論文
Category(English)	Doctoral Thesis
種別(和文)	要約
Type(English)	Outline

Silica (SiO_2) has shown great promise as a prime candidate for the next generation anode materials for lithium-ion batteries, since it has a high lithium storage capability supported by the formation of elemental silicon from electrochemical reactions with Li-ion. Nanostructured morphology of silica composited with carbon can facilitate good conductivity and extended cycling of the electrode material. In the present studies, novel preparation methods of SiO_2 /Carbon (C) nanocomposite and nano- SiO_2 /C composite anode materials for lithium-ion batteries were developed by using mechanochemical assisted sol-gel, drip combustion in a fluidized bed reactor, and ultrasonic spray pyrolysis methods combined with a high-energy dry ball milling process. The effect of process parameters on the physical and electrochemical properties of obtained samples was extensively investigated.