Molybdenum disulfide intercalates with special transport properties

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Abstract

Chemical modification of molybdenum disulfide based either in the restacking of the layered solid or the intercalation of lithium or organic donors as poly(ethylene oxide) or dialkylamines lends to products with improved transport properties. The products are mixed electronic-ionic conductors. Electrical conductivity, which in pressure compacted samples shows a clear anisotropic behavior, depends on the nature of the intercalated phase. For some dialkylamines sigma -values of about 10(-2) S cm(-1) are reached. Electrode potentials available from charge/discharge curves in lithium electrochemical cells are mainly determined by both the trigonal prismatic-octahedral phase equilibrium in the matrix and the capacity of the guest for stabilizing Li+ ions in the interlaminar spaces. MoS2 phase change during lithium intercalation is also detected in the analysis of the Li-7-NMR linewidths of the LixMoS2 intercalates. Lithium diffusion coefficient analysis indicates that the mass transport of modified MoS2 is in general better than in the pristine compound.

Palabras clave

Palabras clave de autor:intercalation compounds; molybdenum disulfide; transport properties
KeyWords Plus:POLY(ETHYLENE OXIDE); LITHIUM DIFFUSION; CONDUCTIVITY; NANOCOMPOSITES

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Editorial

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