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Organic-inorganic hybrid materials doped with lithium ions

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Keywords

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Abstract

Organic-inorganic hybrid materials have been synthesized by the sol-gel method, using tetraethyl orthosilicate (TEOS), poly(ethylene oxide) (PEO), net-polyacrylic-*inter-net*-polysiloxane, butyl acrylate, ethyl acetoacetate, tetrahydrofuran, acetonitrile and LiClO_4 precursors and additives. Mass fractions of the organic additions in the gels were of ca 35-40 mass%. The hybrid materials obtained were amorphous, colourless, transparent or translucent, with room temperature ionic conductivities in a range of 10^{-4} - $10^{-3} \Omega^{-1}\text{cm}^{-1}$. The results of scanning electron microscopy equipped with energy dispersive X-ray spectroscopy (SEM/EDX), Fourier transform infrared spectroscopy and ^{29}Si MAS Nuclear Magnetic Resonance analysis have revealed $[\text{SiO}_4]$ tetrahedrons polycondensation strongly influenced by organic precursors and chemical bonding between organic and inorganic parts of the gels obtained.



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