Gigantic Photoresponse and Reversible Photoswitching in Ionic

Conductivity of Polycrystalline β-AgI

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ABSTRACT: A photoinduced change in the ionic conductivity was measured for

polycrystalline silver iodide (AgI) by complex impedance spectroscopy, and a

three-order magnitude reduction (from gigaohms to megaohms) in the bulk

resistance of β-AgI on photoexcitation was found at 77K. The bulk resistance

gradually increased when the light was turned off. Reversible photoinduced

switching (photoswitching) between low and high resistivity states was observed,

depending on the time in the dark state. This gigantic photoinduced change in the

ionic conductivity is explained in terms of distortion of the β-AgI lattice following

the photoinduced generation of electron-hole pairs.

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