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Obtaining a ZnSe furnace charge from aqueous solution

ABSTRACT. The influence of synthesis conditions on the process of obtaining a charge of zinc selenide from alkaline solutions via the interaction of zinc with selenium and zinc oxide with selenium in the presence of a reducing agent is reported. It is shown that the interaction of zinc and selenium in alkaline solution and the ZnSe output increases with increasing concentration of alkali and synthesis time and reaches a maximum of about 85 wt% in 15 molar NaOH after 2 hours, resulting in the formation of 0.1–0.3 μm spherical particles. The use of hydrazine hydrate can increase ZnSe output up to 97 wt %. The powder is formed in spherical agglomerates with an average size of 0.5 μm . The main impurity phases are oxide, carbonate and zinc hydroxide, which are removed during vacuum heat treatment at 800–900 $^{\circ}\text{C}$ for 1 hour.

Keywords: optical components, particles, powder for growing crystals, sensors, solar energy converters

Nanotechnology Perceptions **10** (2014) 154–163