## Optimization of synthesis conditions of nanosized SnO<sub>2</sub> for gas sensors

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The influence of synthesis conditions on the structure of SnO<sub>2</sub> has been studied. Base hydrolysis of Sn(II) and Sn(IV) salts (SnSO<sub>4</sub> and SnCl<sub>4</sub>) was carried out to obtain SnO<sub>2</sub> products. Thus generated precipitates were transformed to SnO<sub>2</sub> by two ways: 1) thermal dehydration of Sn(OH)<sub>2</sub> and SnO<sub>2</sub>·nH<sub>2</sub>O hydroxides; 2) sol→gel→xerogel transformation of the precipitate and further thermal dehydration. The precipitates were peptized with various chemical agents: HNO<sub>3</sub>, NH<sub>3</sub>·H<sub>2</sub>O, H<sub>2</sub>SO<sub>4</sub> under ultrasonic treatment. The samples were heated at 500–800 °C in air and in oxygen flow. The structural features of the SnO<sub>2</sub> samples were studied by XRD, EM, ESR and IR-spectroscopy. The influence of the valence state of tin and the nature of the anion (SO<sub>4</sub><sup>2-</sup>) on the structure of the samples, grain size and on concentration of point defects was revealed.