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**Synergistic solid lubricants system based on selected sulfides of technology metals**

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Technology advances have resulted in a growing demand for the new tribology materials. In development of the properties of tribology materials, improvements can be achieved by combining materials in form of composites. The aim of this work was production of solid lubricants composites based on sulfides of technology metals. Selected solid lubricant powders, tin sulfides ( $\text{Sn}_x\text{S}_y$ ) and tungsten disulfide ( $\text{WS}_2$ ), were synthesized by pyrometallurgical method in rotary tilting tube furnace (ST-1200RGV). The chemical thermodynamic parameters of the synthesis were determined using HSC Chemistry software modeling package. Characterization of the obtained powders included analysis of chemical composition by optical emission spectroscopy, phase composition identification by X-ray diffraction (XRD) and microstructural examination by the scanning electron microscopy (SEM) and energy-dispersive spectroscopy (EDS). Finally, the tribological properties of the as-synthesized powders in composite mixture were estimated. It has been shown the beneficial synergistic effect due to unique combination of properties between tin sulfides and tungsten disulfide in composite. In addition, advantage of synergistic tribology material ( $\text{Sn}_x\text{S}_y/\text{WS}_2$ ) is simple method of synthesis and environmentally acceptable components of the composite.

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