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Investigation of Polyvinyl Alcohol-CuS Compound with Metal-Like Conductivity

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PVA-CuS compound produced from hybrid interpolymeric polyvinyl alcohol (PVA)-$CuCl_2$ complex through solid state sulfurization was investigated by means of X-ray diffraction, UV-Vis and Raman spectroscopy, and direct current measurements. It is claimed that CuS in this compound has one-dimensional structure. This result is achieved by using a precursor technique based on diffusion limitation at solid state synthesis, so that the structure of initial reagents is inherited by reaction products. The produced material is determined to possess metal-type conductivity and thermopower in the vicinity of room temperature.

Keywords: hybrid interpolymeric complexes, polyvinyl alcohol, CuS, inorganic polymers, one-dimensional structures, electrical properties.