

CC: imre.szilagyi@mail.bme.hu

Dear Dr. Balitska,

As the Editor-in-Chief of Journal of Thermal Analysis and Calorimetry I would be grateful if you could find time to review the Article "DSC TOPEM® study of high-energy mechanical milling driven amorphization in β -As₄S₄-based arsenicals" for a possible publication in our Journal.

This is the abstract:

Temperature-modulated DSC TOPEM® method was applied to study amorphization in directly synthesized high-temperature polymorph of tetra-arsenic tetra-sulfide β -As₄S₄ affected to high-energy mechanical milling in a dry mode with 100-600 min⁻¹ rotational speeds. The appeared amorphous phase is shown to possess dual nature, being related to As-rich glassy-like substances with low- and high-temperature glass transition mid-points. In respect to DSC TOPEM® studies, the crystalline-amorphous heterogeneity of chemical environment around β -As₄S₄ crystallites results in incongruent double-peak melting revealed through two endothermic effects at ~305°C and ~315°C. Amorphous phase continuously generated under ball milling with increased rotational speed is identified as compositionally authentic to arsenic monosulfide, but different in medium-range order from stoichiometric As₂S₃. The overall amorphization in commercial arsenic sulfide prepared by direct synthesis from elemental constituents under high-energy ball milling occurs from two sources, these being high-to-low-T_g amorphous phase transformation and direct vitrification of β -As₄S₄ phase. These data testify in a favor of "shell" model treated solid-state amorphization in terms of defect generation in parent β -As₄S₄ phase, the amorphous substance being nucleated heterogeneously from grain boundaries followed by stretching into crystalline grain interior.

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With kind regards

Dr. Imre Miklós Szilágyi Editor-in-Chief JTAC-D-18-00376 "DSC TOPEM® study of high-energy mechanical milling driven amorphization in β -As₄S₄-based arsenicals" Journal of Thermal Analysis and Calorimetry

Dear Dr. Balitska,

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We look forward receiving your review by 20-04-2018.

If you have any questions, please do not hesitate to contact us. We appreciate your assistance.

With kind regards

Dr. Imre Miklós Szilágyi

Editor-in-Chief Journal of Thermal Analysis and Calorimetry

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DSC TOPEM® study of high-energy mechanical milling driven amorphization in β -As₄S₄-based arsenicals Journal of Thermal Analysis and Calorimetry

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Dr. Imre Miklós Szilágyi

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