

- **APNA-D-17-00232**
"Free volume studies on mechanochemically-milled β -As₄S₄ arsenicals employing positron annihilation lifetime spectroscopy"
Original Submission

Valentina Balitska (Reviewer 1)

<ul style="list-style-type: none"> • Reviewer Recommendation Term: 	<ul style="list-style-type: none"> • Minor Revisions Transfer Authorization 	<ul style="list-style-type: none"> • Response
	<ul style="list-style-type: none"> • If this submission is transferred to another publication, do we have your consent to include your identifying information? 	<ul style="list-style-type: none"> • No
	<ul style="list-style-type: none"> • If this submission is transferred to another publication, do we have your consent to include your original review? 	<ul style="list-style-type: none"> • No
	<ul style="list-style-type: none"> • Comments to Editor: • 	
<ul style="list-style-type: none"> • Comments to Author: • The paper concerns free-volume structural studies for directly synthesized beta-As₄S₄ subjected to high-energy milling with increased speeds 100-600 rpm. Continuous generation of amorphous phase under milling confirms "shell" kinetic model of amorphization. The main result of this work is amorphization in milling products, which is revealed in PAL spectroscopy through two different trapping-conversion schemes - Ps-to-positron (200 rpm) and positron-to-Ps (600 rpm). I suggest some minor corrections before publishing this paper. <ol style="list-style-type: none"> 1. Amorphization in beta-As₄S₄ is connected with some structural transformations under grinding (creation a large number of defects) resulted in arsenic sulfide with network structure, so within molecular-to-network transition. Possible variant of this process is given by Musgraves et al. [Int. J. Appl. Glass. Sci 2 (2011) 308-320]. Is this variant typical for the case in this paper? 2. The authors are to explain (in the Discussion part) expected path from As₄S₄ molecule in crystalline beta-As₄S₄ to after-milling amorphous phase (bond-breaking or bond-switching, destruction or polymerization ...). 3. The authors identify the milling-driven amorphization due to depressing and time-enhancing trend in the PAL spectrum peak. Does this criterion serve as universal for other amorphization processes? Or maybe this is proper only to milled beta-As₄S₄ arsenical? The authors should explain general validation conditions for applicability this criterion. • 		

- Dear Dr. Balitska,
- Thank you very much for your review of manuscript
- APNA-D-17-00232, "Free volume studies on mechanochemically-milled β -As₄S₄ arsenicals employing positron annihilation lifetime spectroscopy".
- We greatly appreciate your assistance.
- With kind regards,
- Journals Editorial Office
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