# Article information:

Na2Ba[Na2Sn2S7]: Structural Tolerance Factor‐Guided NLO Performance Improvement - Li - 2023 - Angewandte Chemie International Edition - Wiley Online Library  
<https://onlinelibrary.wiley.com/doi/full/10.1002/anie.202218048?pass_tag=1>

# Article summary:

1. The article discusses the rare noncentrosymmetric (NCS) chalcogenides that exhibit unique physical properties, such as second-order harmonic generation (SHG) in the mid-IR spectral region, ferroelectricity, and piezoelectricity.

2. The article explores new As- and Hg-free candidates from the II-[I2-IV-Q4] family of chalcogenides, which have more than 100 members and some have shown excellent photovoltaic, thermoelectric, or NLO properties.

3. The article reports 8 new members of the II-[I2-IV-Q4] family and shows that a better balance between band gap and SHG is realized in Na2Ba[Na2Sn2S7], which exhibits a large band gap of 3.42 eV and excellent NLO properties.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally trustworthy and reliable as it provides detailed information about the II-[I2-IV-Q4] family of chalcogenides and their potential applications in nonlinear optics (NLO). The authors provide evidence for their claims by citing previous studies on this family of compounds, which show correlations between structural tolerance factors (STFs) and various properties such as chemical stability, ionic transport, ferroelectricity, thermal expansion etc. Furthermore, they also provide crystal structures to illustrate their points.

However, there are some potential biases in the article that should be noted. For example, the authors focus mainly on exploring new As- and Hg-free candidates from this family without considering other possible alternatives or counterarguments. Additionally, they do not discuss any potential risks associated with these compounds or present both sides equally when discussing their advantages over other materials such as oxides or organic counterparts. Finally, there is a lack of detail regarding how exactly these compounds were synthesized which could be useful for further research into this area.

# Topics for further research:

* Nonlinear optics applications
* Alternative materials for NLO
* Structural tolerance factors
* Chemical stability of chalcogenides
* Ionic transport in chalcogenides
* Synthesis of chalcogenides

# Report location:

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