# Article information:

Halide double perovskite-based efficient mechanical energy harvester and storage devices for self-charging power unit - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S2211285522012265?dgcid=raven_sd_via_email>

# Article summary:

1. Lead-free MA2SnX6 double halide perovskite thin films are demonstrated as a potential material for high-efficiency self-charging power units (SPUs).

2. The integration of an MA2SnCl6-based piezoelectric nanogenerator (PENG) with a lithium metal battery (LMB) is demonstrated, with the MA2SnCl6-based PENG exhibiting a high output power density of 7.33 μW cm−2 and the MA2SnCl6-based LMB recording the highest specific capacity of 589.98 mAh g−1.

3. A 1 nm-thick Al2O3 coating on the MA2SnCl6 surface improved the capacity retention from 16.9 % to 75.1 % for 100 cycles, indicating its stable performance.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article “Halide double perovskite-based efficient mechanical energy harvester and storage devices for self-charging power unit” is generally reliable and trustworthy in its reporting of research findings related to lead-free MA2SnX6 double halide perovskite thin films as a potential material for high-efficiency self-charging power units (SPUs). The article provides detailed information about the integration of an MA2SnCl6-based piezoelectric nanogenerator (PENG) with a lithium metal battery (LMB), which also uses an MA2SnCl6-based thin film as the cathode, and how this combination can be used to realize self-powered operation of various small scale electronics such as humidity meters, calculators, and LEDs. The article also discusses how a 1 nm thick Al2O3 coating on the MA2SnCl6 surface improved its capacity retention from 16.9% to 75.1% for 100 cycles, indicating its stable performance.

The article does not appear to have any major biases or one sided reporting, nor does it contain any unsupported claims or missing points of consideration that could affect its reliability or trustworthiness. All claims made in the article are supported by evidence provided in the form of experimental results and theoretical calculations, making it clear that all conclusions drawn are based on sound scientific evidence rather than speculation or opinion. Furthermore, no promotional content was found in the article which could indicate partiality towards any particular product or technology mentioned in it. Additionally, possible risks associated with using lead free MHPs were noted throughout the article, further increasing its trustworthiness and reliability as a source of information about this topic.

# Topics for further research:

* Lead-free MA2SnX6 double halide perovskite
* Piezoelectric nanogenerator
* Lithium metal battery
* Self-powered electronics
* Al2O3 coating
* Capacity retention of MHPs

# Report location:

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