# Article information:

Ultrarobust Photothermal Materials via Dynamic Crosslinking for Solar Harvesting - Huang - 2022 - Small - Wiley Online Library  
<https://onlinelibrary.wiley.com/doi/10.1002/smll.202104048>

# Article summary:

1. This article proposes an ultrarobust photothermal material via dynamic crosslinking based on the unique mechanical deformable characteristic of liquid metals.

2. The proposed material exhibits strong broad-band light absorption, excellent photothermal conversion ability, remarkable mechanical property, and long-term structural reliability.

3. This work provides a valuable guidance for the design and fabrication of high-performance solar-harvesting materials and extends the possibility of liquid metal-based composites in a wide range of revolutionary technologies.

# 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 “Ultrarobust Photothermal Materials via Dynamic Crosslinking for Solar Harvesting” by Huang (2022) is a well-written and comprehensive piece that presents a novel approach to developing efficient and mechanically durable photothermal materials using liquid metals. The article is written in an objective manner, providing detailed information about the material design, characterization, and mechanical properties of the proposed composite material. The authors provide evidence to support their claims through various experiments such as TEM, XPS, Raman spectroscopy, FTIR spectroscopy, PCMW2D correlation spectra, SEM imaging, etc., which makes it reliable and trustworthy.

However, there are some points that could be improved upon in order to make the article more balanced and comprehensive. For example, while the authors discuss potential applications of their proposed material in harvesting sunlight for electricity generation in real environments based on a solar thermoelectric generator system, they do not provide any evidence or data to support this claim. Additionally, while they discuss potential risks associated with using liquid metals in their proposed composite material (e.g., high surface energy), they do not explore possible counterarguments or alternative solutions that could be used to mitigate these risks. Furthermore, while they discuss potential advantages of their proposed material over traditional polymer/rigid filler photothermal architectures (e.g., lightweight corrosion resistance), they do not present any evidence or data to back up these claims or compare them against other existing materials/technologies in terms of performance metrics such as efficiency or cost effectiveness.

In conclusion, this article provides an interesting approach to developing efficient and mechanically durable photothermal materials using liquid metals; however it could benefit from further exploration into possible counterarguments or alternative solutions as well as comparison against existing materials/technologies in terms of performance metrics such as efficiency or cost effectiveness in order to make it more balanced and comprehensive.

# Topics for further research:

* Solar thermoelectric generator system
* Corrosion resistance of photothermal materials
* Performance metrics of photothermal materials
* Cost effectiveness of photothermal materials
* Alternative solutions for liquid metals
* Comparison of photothermal materials with existing technologies

# Report location:

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