



Perovskite oxide membrane growth by hybrid molecular beam epitaxy

A novel method to grow freestanding perovskite oxides on 2D materials.

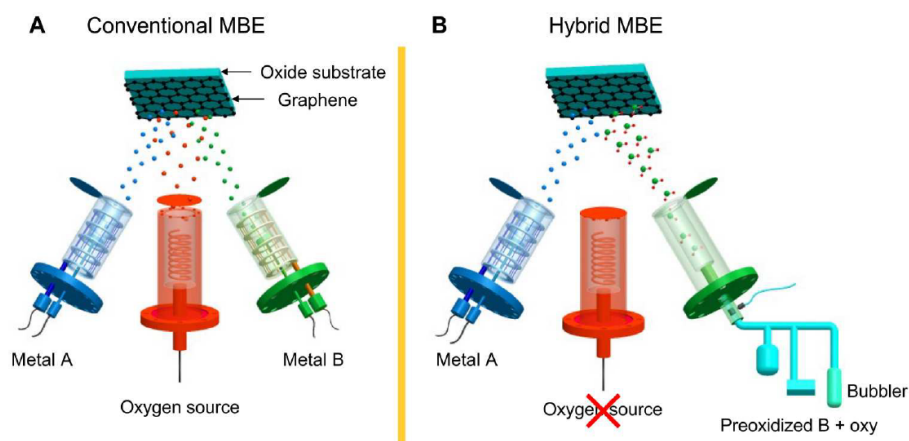
Technology ID

2023-218

Category

Engineering & Physical Sciences/Chemicals
Engineering & Physical Sciences/Materials
Engineering & Physical Sciences/Nanotechnology
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IP Status: Provisional Patent Application Filed

Applications

- Flexible electronics
- Tunable materials

Technology Overview

Current perovskite thin film growth techniques are not compatible with perovskite oxide materials as the aggressive oxidizing conditions used in synthesis damages the 2D material that they are grown on. Researchers at the University of Minnesota have developed a novel method for the growth of freestanding perovskite oxide membranes via hybrid molecular beam epitaxy. This approach uses volatile metal-organic precursors without an additional source of oxygen to allow the growth of perovskite oxide films on 2D materials. This method enables the film to be transferred off of the 2D material for application elsewhere.

Phase of Development

TRL: 3-4

Lab scale proof of concept has been demonstrated.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development



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Press Releases

[UMN College of Science and Engineering](#) January 3, 2023

Researchers

- [Bharat Jalan, PhD](#) Professor, Department of Chemical Engineering and Materials Science

References

1. Hyojin Yoon et al.(December 23, 2022) , <https://www.science.org/doi/10.1126/sciadv.add5328>, <https://www.science.org/doi/10.1126/sciadv.add5328>, 8