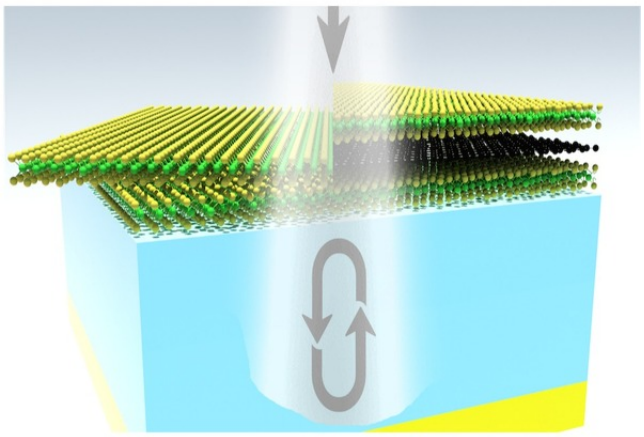
UNIVERSITY OF MINNESOTA
Driven to Discover℠

# Realization of a perfect light absorber in two-dimensional homobilayer by reducing interlayer interaction

**Nanofabrication approaches for realizing perfect light absorbance in two-dimensional homobilayer materials**



**Technology ID**
2023-007

**Category**
All Technologies
Engineering & Physical Sciences/Design Specifications
Engineering & Physical Sciences/Nanotechnology
Engineering & Physical Sciences/Photonics
Engineering & Physical Sciences/Semiconductor

**View online**

**IP Status:** US Patent Pending ; Application No. 18/733,569

## Applications

- Secure optical communications
- Photodetectors
- Photovoltaics
- Stealth materials

## Technology Overview

Near-perfect light absorbers (NPLA) with absorbance of at least 99%, have a wide range of applications ranging from energy and sensing devices to stealth technologies and secure communications. Current approaches for fabricating NPLAs require complex and expensive nanofabrication approaches. Researchers at the University of Minnesota have developed multiple nanofabrication approaches that rely on straightforward fabrication approaches to significantly decrease the complexity and cost of fabricating NPLAs. This is accomplished with a simple single mirror cavity structure using a two-dimensional homobilayer with reduced interlayer interaction either by introducing a twist angle or inserting a buffer layer.

## Phase of Development

**TRL: 2-3**
Proof-of-concept

### Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact our office to share your business' needs and learn more.

### Press Releases

**UMN College of Science & Engineering Research Brief** 8/1/2023

### Researchers

- **Tony Low, PhD** Professor, Department of Electrical and Computer Engineering
- **Steven Koester, PhD** Professor, Department of Electrical and Computer Engineering

### References


1. Seungjun Lee, Dongjea Seo, Sang Hyun Park, Nezhueytl Izquierdo, Eng Hock Lee, Rehan Younas, Guanyu Zhou, Milan Palei, Anthony J. Hoffman, Min Seok Jang, Christopher L. Hinkle, Steven J. Koester, Tony Low(2023) , https://www.nature.com/articles/s41467-023-39450-0, https://www.nature.com/ncomms/, 14, 3889