## Efficient Peripheral Nerve Stimulation and Neuroimaging

**Description:**

This technology introduces a flexible transparent 3D graphene-based single-step laser neural electrode.  The electrode offers ultra-high charge storage and injection capacity for efficient peripheral nerve stimulation and neuroimaging.
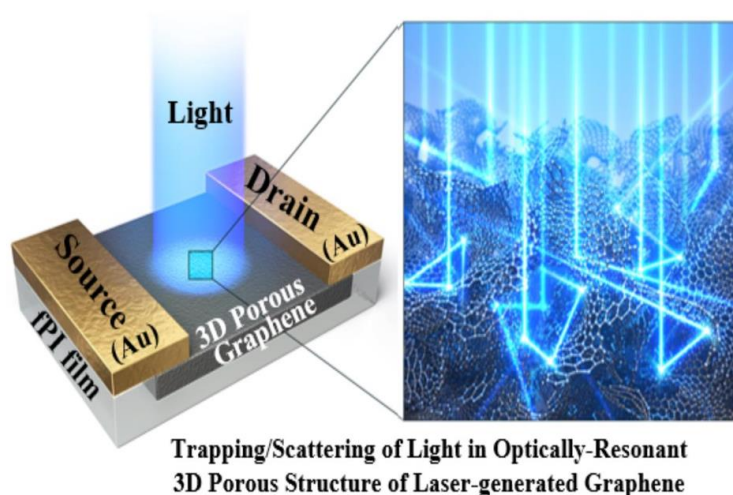
**Problem:**

Conventional metal-based neural electrodes have low electrochemical performance and poor flexibility, limiting their effectiveness in peripheral nerve stimulation and neuroimaging.

**Solution:**

A scalable, cost-effective laser-based method produces flexible, high-surface-area 3D graphene electrodes with superior electrochemical properties.

**Advantages:**

- Ultra-high charge storage capacity (CSC)
- Enhanced charge injection capacity (CIC)
- Flexible and conformal for better electrode-tissue contact
- High transparency enabling simultaneous stimulation and imaging
- Single-step, rapid, and low-cost fabrication process
- Scalable for clinical and commercial applications
- Superior endurance across stimulation and bending cycles
- Biocompatible and chemically stable for long-term use



Trapping/Scattering of Light in Optically-Resonant
3D Porous Structure of Laser-generated Graphene