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# Barley Stripe Mosaic Virus-derived Biotemplates with Tunable Length and Higher Stability for Nanoparticle Synthesis

**Genetically modifiable plant virus-like particles function as superior, environmentally-friendly biotemplates for synthesizing uniform metallic nanoparticles used in small electronic devices and battery electrodes.**

Researchers at Purdue University have developed plant virus-like particles (VLPs) derived from Barley-Stripe Mosaic Virus that can be used as biotemplates for synthesizing nanoparticles. The VLPs can be easily genetically modified to tune their size and shape prior to metal deposition. The researchers found that the VLPs adsorb twice as much metal as VLPs compared to Tobacco Mosaic Virus, allowing for thicker coatings and unique nanosynthesis opportunities. Furthermore, the VLPs have a unique region that is surface-exposed and can be engineered for additional desired properties, such as accelerated deposition rate. The applications for these VLPs is in the miniaturization of electronic devices, such as in battery electrodes.

**Advantages**:

- Uniform nanomaterial

- Twice amount of metal adsorbed compared to Tobacco Mosaic

- Environmentally-friendly

Potential Applications:

- Battery electrodes

- Small electronic devices

**TRL:** 3

**Intellectual Property:**

**Technology ID**

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**Category**

Biotechnology & Life Sciences/Synthetic Biology & Genetic Engineering

Energy & Power Systems/Energy Storage

Materials Science & Nanotechnology/Nanomaterials & Nanostructures

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