



Sensor for Parkinson's Disease Management

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Recently, the Scientists at the **Institute of Advanced Study in Science and Technology (IASST)**, an autonomous institute of the [Department of Science and Technology](#) have developed an affordable, portable **smartphone-based fluorescence turn-on sensor system to enhance [Parkinson's disease management](#)** by accurately monitoring L-dopa levels.

- Parkinson's disease is characterized by a **continuous decrease in neuron cells**, leading to a reduction in [dopamine \(neurotransmitter\) levels](#) in our body
- **L-dopa is a chemical that converts to dopamine**, acts as an anti-Parkinson's drug, helping compensate for the dopamine deficiency.
- However, the progressive nature of Parkinson's requires increasing L-dopa dosage, **which can cause serious side effects**, while **insufficient dosage leads to the return of symptoms**.
- The sensor is made by coating a **layer of silk-fibroin protein**, from silk cocoons, onto reduced **graphene oxide nanoparticles**.
 - This combination helps the sensor glow when it detects L-dopa in blood, sweat, or urine.
- The researchers have designed a smartphone-based electronic device that connects to a 365nm [Light Emitting Diodes \(LED\)](#) via a 5V smartphone charger and is housed in a dark chamber to block external light.
 - By shining the LED on the sensor and taking pictures with a smartphone, the **device captures color changes**.
- The RGB (red, green and blue) values from the images are used to **evaluate L-dopa concentration** using a mobile app, making it ideal for quick testing in remote areas.

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