

# Greener methods for making popular nanoparticle

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Already renowned for its beneficial effects on human health, green tea could have a new role—along with other natural plant-based substances—in a healthier, more sustainable production of the most widely used family of nanoparticles, scientists say. Published in *ACS Sustainable Chemistry & Engineering*, their Perspective article concludes that greener methods for making silver nanoparticles are becoming available.

Rajender Varma, Mallikarjuna Nadagouda and colleagues explain that [silver](#) nanoparticles are used in a host of products, especially for their ability to kill bacteria and ward off undesirable odors. Those products include antibacterial socks, undergarments and other clothing. Existing processes for making silver nanoparticles require potentially hazardous substances, use a lot of energy and leave behind undesirable byproducts that require special handling. With production expected to increase, scientists are seeking greener ways to make silver nanoparticles.

The article describes how extracts from plants—such as [green tea](#) plants, sunflowers, coffee, fruit and peppers—have emerged as possible substitutes that can replace toxic substances normally used to make the nanoparticles. In addition, extracts from bacteria and fungi, as well as natural polymers, like starches, could serve as substitutes. "These newer techniques for greener AgNP synthesis using biorenewable materials appear promising as they do not have any toxic materials deployed during the production process," the scientists say.

The article is titled "Greener Techniques for the Synthesis of Silver [Nanoparticles](#) using Plant Extracts, Enzymes, Bacteria, Biodegradable Polymers and Microwaves."

**More information:** *ACS Sustainable Chem. Eng.*, Just Accepted Manuscript [DOI: 10.1021/sc4000362](https://doi.org/10.1021/sc4000362)

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