

# A new way to create pumpkin spice products, drugs, cosmetics

15 November 2019, by Chris Adam



The Purdue University team created a method to mix small, encapsulated essential oil compounds in water without changing the appearance of the water. Credit: Purdue University

"Like oil and water" doesn't apply just to personal relationships that aren't working. It also applies to the challenges scientists face when combining spices and other products that conventionally do not mix well in producing improved drugs, foods and cosmetics.

Scientists at Purdue University have developed patented technology to help combine oil and water with other [natural elements](#) to produce better drugs, cosmetics and foods. Some of those foods and cosmetics use additives such as clove, mint, cinnamon and pumpkin spice.

The Purdue team created a method to mix small, encapsulated essential oil compounds in water without changing the appearance of the water.

"Our method has many applications to readily combine flavoring agents, aroma-rich essential oils

and [fat-soluble vitamins](#) with food, beverages, drugs and cosmetics," said Nathan Mosier, the Indiana Soybean Alliance Soybean Utilization Endowed Chair in Purdue's Department of Agricultural and Biological Engineering, who led the development of the technology.

The Purdue method involves a combination of active compounds, [vegetable oil](#) and surfactants, which are compounds that lower the surface tension between two liquids.

"Our unique combination allows things such as [essential oils](#) to be water-compatible for use in product and drug development," Mosier said. "Usually, when you mix oils and water, you end up with them separating or creating a cloudy mess. Our method still leads to the water looking clear because the droplets are nanoscale and not affected by visible light."

Nano-emulsion



Traditional emulsion



The Purdue University team created a method to mix small, encapsulated essential oil compounds in water without changing the appearance of the water. Credit: Purdue University

Mosier said the Purdue method is cost-effective and uses a small amount of energy. He said it also requires little training to understand the method.

The researchers also are working with entomology researchers at Purdue to develop the method for applications with insecticides and sprays to stop bed bugs.

Provided by Purdue University

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