



TECHNOLOGY

Simple, Inexpensive Gelators for Organic Solvents

OVERVIEW

Salts can modulate self-assembly in water by screening electrostatic repulsions between headgroups of amphiphiles—chemical compounds possessing both hydrophilic (water-loving) and lipophilic (fat-loving) properties—and by adsorption of counterions at the interface of amphiphilic aggregates. For example, aromatic salts like sodium salicylate can induce spherical cationic micelles to grow into long cylinders. But can salts also be dissolved into oils, either alone or in conjunction with amphiphiles? If so, can salts be used as gelators?

Researchers at the University of Maryland have discovered a novel and very simple formula for gelling organic solvents. The formula allows the researchers to convert any organic solvent from a pourable liquid to a paste-like material that has the consistency of hair gel. Although many others have created gelator molecules that can do the same thing, this formula involves the combination of two simple, cheap, existing molecules—a salt and a lipid. Not only are these molecules abundant and cheap, they are non-toxic (even edible!), and definitely biocompatible. One use of this technology will be in gelling fuels—gelled fuel would be safer to transport than liquid fuel.

Advantages:

- Cheap, abundant, and safe molecules
- Environmentally benign
- Capable of gelling at room temperature

Applications:

- Conversion of liquid fuels into gels that are safer to handle
- Conversion of edible oils into spreadable gels

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

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CATEGORIES

- Chemical

EXTERNAL RESOURCES

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