PURDUE INNOVATES | Office of Technology Commercialization

Soy-based Cationic Surfactants

Biobased and biodegradable soy-derived cationic surfactants offer a cost-effective, high-performing replacement for petroleum-based alternatives in personal care and industrial applications, supporting sustainability goals.

Researchers at Purdue University have developed soy-based cationic surfactants that are biobased and biodegradable. These surfactants are ideal for industrial applications as they possess both comparable and superior surface activity to petroleum-based surfactants. Most conventional shampoos, conditioners, and antimicrobial washes are petroleum-based and do not biodegrade over time. The surfactants created by Purdue's approach could be used to replace the commercial surfactants currently used in consumer goods without negatively impacting the environment and human health. This technology offers favorable benefits to companies who manufacture personal care products and are looking to become more sustainable without impacting product performance.

Advantages

-Biodegradable alternative for consumer goods

-Replacement for petroleum-based alternatives

-Inexpensive

-Do not sacrifice interfacial properties

Applications

-Green Technology

-Bio-based materials

-Personal care products

Technology Validation:

The surfactant exhibited comparable and better surface activity to commercial quaternary ammonium (QA) cetyltrimethylammonium bromide (C16TAB) and better surface activity than dodecyltrimethylammonium

Technology ID
2023-YOUN-70130

Category
Chemicals & Advanced Materials/Green & Bio-Based Chemistry
GreenTech/Circular Economy & Waste Reduction
GreenTech/Sustainable Packaging Materials

Authors
Carlos Javier Martinez
Jeffrey P Youngblood
Yue Zheng

Further information
Dipak Narula
dnarula@prf.org

View online

bromide (C12TAB).

TRL: 3

Intellectual Property:

Provisional-Patent, 2023-11-06, United States | PCT-Patent, 2024-10-30, WO

Keywords: soy-based cationic surfactants, biobased, biodegradable, industrial surfactants, petroleum-based replacement, sustainable personal care, green technology, bio-based materials, interfacial properties, consumer goods alternative, Agriculture, biobased, Biodegradable, cationic, conditioner, fatty acid amide, Green Technology, Materials and Manufacturing, Personal Care, plant based, shampoo, soap, Soybean, surfactant, Sustainability, sustainable