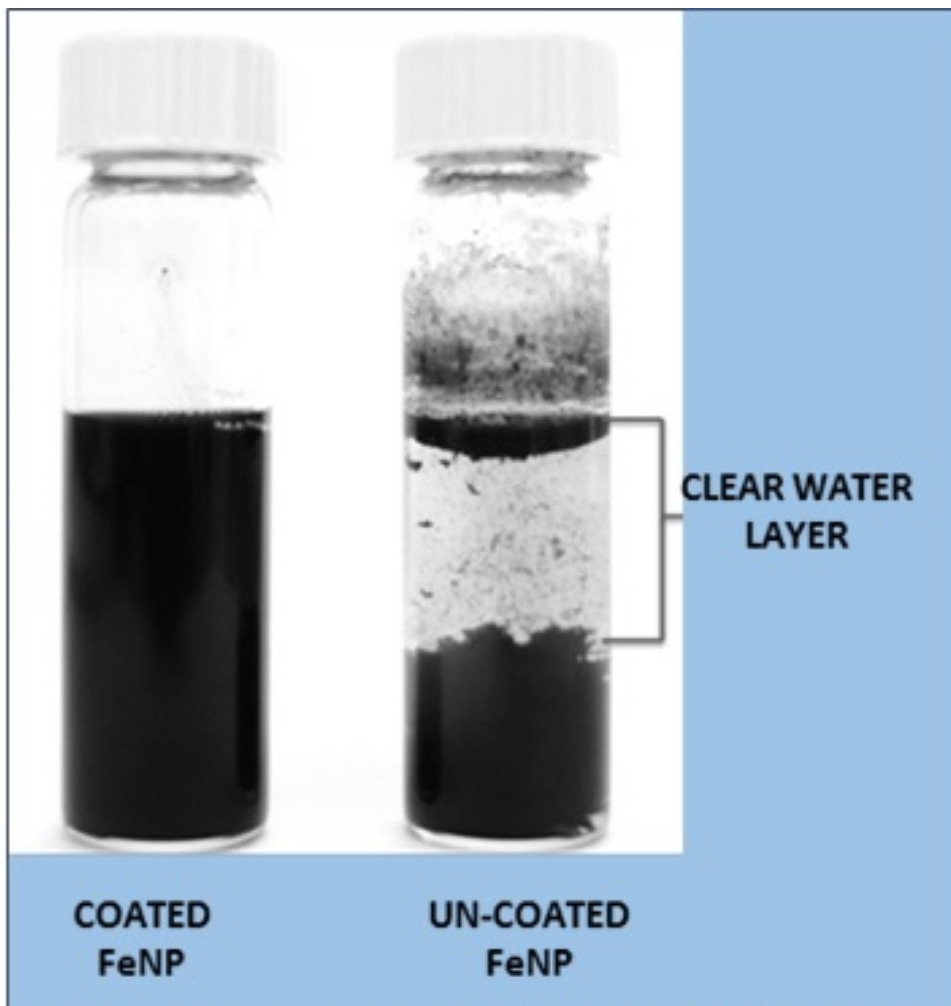


## Vegetable Oil-Based Polymers for Nanoparticle Surface Modification (RFT-413)

### Invention Summary

The extremely high surface area of nanoparticles provides many advantages over conventional particles with dimensions in the micron scale. For a variety of applications, it is necessary to suspend the nanoparticles in a liquid medium. Researchers at NDSU have developed a new plant-oil-based polymer technology focused on the application of nanoparticle suspension in water.



**NDSU's coated iron nanoparticles (FeNP) exhibit excellent suspension in water and are highly biodegradable.**

One primary example of this technology application is its use as a protectant, while dispersing and suspending iron nanoparticles in decontamination efforts involving chlorinated

hydrocarbons, such as tetrachloroethylene. The copolymers described herein are not only highly effective with respect to suspending nanoparticles in water, but also exhibit high biodegradability. Biodegradability is important for environmental applications because the polymer is typically not recovered after treatment of a ground water contaminant plume. In addition, compared to other approaches, this copolymer technology enables compositions to be highly tailored or optimized for a given nanoparticle and application.

## Benefits

- Biodegradable
- Increased Dispersion and Suspension in Water
- Multiple Applications
- Novel Protected Composition

## Applications

- Ground Water Remediation
- Detergents
- Production of Carbon Coatings
- Conductive Inks

## Patent

This technology is the subject of Issued US Patent Nos. 9,487,420 and 9,631,040 and is available for licensing/partnering opportunities.

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## NDSURF Tech Key

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