

Tunable Linear Fluoropolymers

Tech ID: 29316 / UC Case 2018-339-0

SUMMARY

UCLA researchers in the Department of Chemistry and Biochemistry have developed a new polymerization technique that allows an easy, safe, and scalable synthesis of functionalized fluoropolymers.

BACKGROUND

Linear fluorinated polymers, such as Teflon™, have outstanding properties such as high chemical resistance and high electric resistivity, which allows diverse applications of them in many different industries. While incredibly useful materials, these polymers are very difficult to characterize and process. Furthermore, the chemicals needed to generate these polymers are highly toxic and corrosive which leads to dangerous working conditions and environmental contamination.

INNOVATION

UCLA researchers have developed a new polymerization technique that allows an easy, safe, and scalable synthesis of functionalized fluoropolymers. This step-growth polymerization uses an organic diene and an α,ω -diiodoperfluorocarbon as building blocks in the presence of a radical initiator with an acetonitrile/water mix as the solvent. The fluorine content of the polymer can be varied, which allows tunability of the physical properties of the resulting polymers. The backbone and the terminal of the polymers can also be modified to allow further functionalization and creation of copolymers.

APPLICATIONS

- ▶ Production of fluoropolymers
- ▶ Functionalization of fluoropolymers

ADVANTAGES

- ▶ Simple, mild and green synthetic method
- ▶ Safer process
- ▶ Potential for versatile functionalization
- ▶ Diverse and tunable

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,597,785	03/07/2023	2018-339
European Patent Office	Published Application	3710489	09/23/2020	2018-339

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Disulfide Bioconjugation](#)
- ▶ [Improved Shortwave Infrared Polymethine Dyes](#)

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OTHER INFORMATION

KEYWORDS

Polymerization, fluorocarbon, synthesis, functional, process

CATEGORIZED AS

- ▶ [Materials & Chemicals](#)
- ▶ [Polymers](#)

RELATED CASES

2018-339-0

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