NATIONAL INSTITUTE OF CHEMISTRY

TECHNOLOGY OFFER

FUNCTIONALIZED ALIPHATIC POLYESTERS

Fields of use
Advanced Materials, Biobased and Degradable Polymers

Intellectual property
Patent pending (EP20158145)

Technology Readiness Level
TRL3

Current state of technology
Laboratory tested

Next steps needed
Testing in an industrial environment.
Scale-up.

Partner sought
R&D collaboration to further develop the technology.
Licensing or sell of IP rights.

Developed by
Department of Polymer Chemistry and Technology

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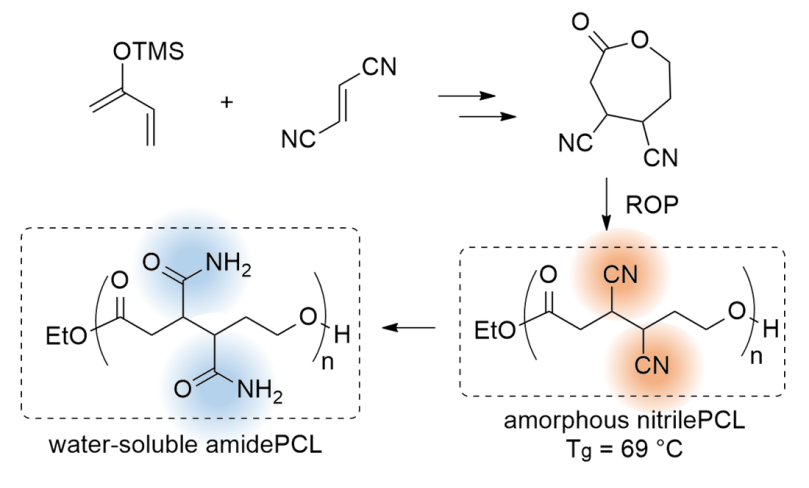
More information about the invention



Due to the growing concern about the environmental footprint of plastics, one of the key trends in modern polymer science is the development of materials that not only possess useful properties but also have inherent (bio)degradability and/or are derived from renewable resources. Among the limited choice of engineering polymers with degradable backbone, aliphatic polyesters are of particular interest. However, the major drawback of conventional aliphatic polyesters is the lack of functional groups along the polymer backbone, which limits the expansion of their applications. The introduction of functional groups into the structure of aliphatic polyesters would allow them to be used as substitutes for various conventional non-degradable polymers.

Technology
The invention provides a synthetic process for the preparation of disubstituted caprolactone monomers bearing electron withdrawing groups (cyano, ester, amide) from bio-derived chemicals, and a polymerization process for such prepared disubstituted caprolactones to produce the functionalized aliphatic polyesters.

Main advantages
The approach enables the preparation of biobased and degradable alternatives to the non-degradable polyacrylonitrile, polyacrylate and polyacrylamide polymers.

KONZORCIJ ZA PRENOS TEHNOLOGIJ IZ JRO V GOSPODARSTVO

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