

Adhesives

A novel, marine-inspired copolymer adhesive offers unprecedented high strength and toughness for versatile applications across biomedical, automotive, aerospace, and construction sectors.

Researchers at Purdue University have developed a new glue-like copolymer adhesive by mimicking proteins in marine species such as oysters and mussels. The adhesive shows promise in myriad applications including biomedical, automotive, aerospace, construction, and military and defense. In making the new adhesive, the researchers addressed the need for adhesives that have both high strength and toughness; usually only one of these material properties is achievable without sacrificing the other. The Purdue adhesives are made with hydrogen-bonding networks for providing toughness. A degree of ductility can be seen prior to material failure. The unparalleled adhesives have been characterized by several methods (e.g., NMR and gel permeation chromatography) and have been tested for bonding substrates including metals, wood, and plastics.

Advantages:

- Ductile
- Strong
- Waterproof
- Versatile

Potential Applications:

- Biomedical
- Automotive
- Aerospace
- Construction

TRL: 5

Technology ID

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Category

Chemicals & Advanced
Materials/Polymer Science &
Smart Materials
Chemicals & Advanced
Materials/Coatings, Adhesives &
Sealants
Materials Science &
Nanotechnology/Biomedical &
Bioinspired Materials

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