

Conductive and Mechanically Robust Composites based on Self-Healing Glassy Polymers

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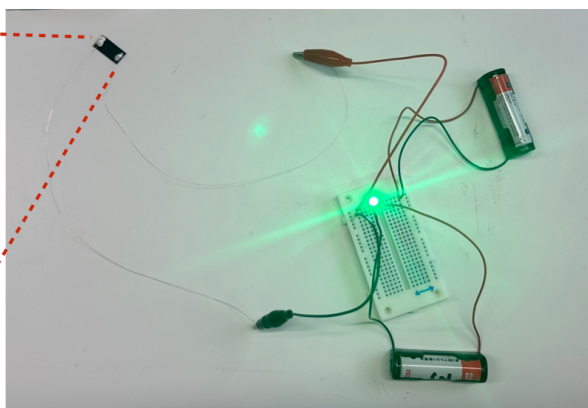
With the growing demand for electronics that can withstand harsh environments, creating materials that prevent device failure is more important than ever. Developing stronger materials or incorporating self-healing properties are promising approaches. However, combining both robustness and self-healing capabilities in a conductive material remains a significant challenge.

In this presentation, we introduce a novel composite that integrates carbon nanotubes (CNTs) into a self-healing glassy polymer, poly(ether thiourea) (TUEG₃), originally developed by Aida Lab in 2018¹. This composite not only demonstrates exceptional mechanical strength and high conductivity but also retains its self-healing ability at room temperature. Remarkably, it can recover its conductivity after being damaged, offering exciting possibilities for advanced electronics in challenging conditions.

Mechanical robust

Self-healable

High conductivity



1) Yanagisawa, Y.; Nan, Y.; Okuro, K.; Aida, T. *Science* **2018**, 359, 72.