

Polyamide-Based High Temperature Plastic Electronics

Low-cost flexible transistors run stably near 195 °C, enabling electronics in harsh automotive, aerospace, and energy environments.

Researchers at Purdue University have developed new polyamide-based high temperature plastic electronics. Current plastic electronics are typically unable to withstand high temperatures, and often require expensive curing steps to create high performance transistors. The lightweight, cost-effective plastic electronics fine-tuned by Purdue researchers have high flexibility and feature thermally robust transistors. In testing, these devices maintained stable charge transport with charge mobility of $1 \text{ cm}^2/\text{Volts}\cdot\text{seconds}$, I_{on}/I_{off} of 10^4 , threshold voltage of 3 Volts, and operational voltage of 10 Volts at $195 \text{ }^\circ\text{C}$ for a duration of twenty-four hours. These polyamide-based plastic electronics can be easily implemented into aerospace, automotive, and oil and gas applications.

Advantages

- Low-Cost
- Thermally Robust
- Light-weight

Applications

- Oil and gas
- Automotive
- Aerospace

TRL: 2

Intellectual Property:

Provisional-Gov. Funding, 2020-06-03, United States | Utility-Gov. Funding,
2021-06-03, United States

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Technology ID

2019-MEI-68685

Category

Semiconductors/Devices &
Components

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