

CWSF 2018 - Ottawa, Ontario

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Reversible Switching electrical pathway using Thermoresponsive-recycled polymer

Challenge: International

Category: Senior

Region: Thailand

City: Rayong,

School:

Abstract: We propose fast and reversible Thermoresponsive device made of polymer named "Thermo-p Fuse." With the presence of overcurrent, the device can cut down the circuit to protect electronic devices or even switch the direction of electric current for other applications. The innovation enhances electronics' durability and can be adapted into various types of equipment such as micro-thermostats in electronic devices or main cutoff in factories.

Biography

The smell of melting plastic and lubricating oil reminds us of the first time we were brought into a plastic factory. The sound of the machines whirling is still vivid in our minds. This was during a field trip to visit PTT Global Chemical which is one of the largest petrochemical in Thailand. Because our school, Kamnoetvidya Science Academy (KVIS), is established and funded by PTT group, we gain this privilege. We started asking questions, one is how factories like PTT handle current overflows. Big machines consist of circuit breakers that prevent current from overflowing. However, unit devices, such as heat generators, motors, or sensors, use fuses. This is still a problem. When a machine shuts down, it takes up to 3 hours to find the cause, just to find that the fuse was culprit. We realized that if we could recognize that the fuse is the cause in the first place, 3 hours would not be wasted. Just 3 hours loss, everything is a catastrophe: huge profit loss, severe damage through the line sequence, or even a late in processing to the next step. Finally, a quote from us, "Every problems we faced, new things and idea are discovered".