Researchers at the University of South Florida have developed a fluorescence sensor to provide accurate and repeatable temperature measurements.

With existing surface temperature sensors, accuracy is poor due to contact difficulty with sample and unavoidable conduction of heat. The accuracy is also highly dependent on the sample type and ambient conditions. There is a need for a more accurate surface temperature sensor applicable for multiple materials.

The fluorescence surface temperature sensor developed at USF is a simple, versatile and novel design with an electrically inert tip. The self-heating capability of the probe compensates for poor thermal contact with the sample and conducting heat loss. As a closed-loop system it can follow a temperature profile, a valuable capability for numerous industrial applications. With minor design modifications, the same probe can also be used as a precision heat joining or cutting tool with accurate temperature control.

This novel fluorescence temperature sensor can be used for a multitude of applications including micro-soldering and microsurgery.

**ADVANTAGES:**
- Self-heating point-contact type probe
- Electrically inert tip
- Precise temperature control prevents damage to delicate samples
- Accurate calibration for higher sensitivity
- Immunity to noise and other measurement interferences

**System for Measuring the True Temperature of a Surface**

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