

## Passive Radiative Cooling

**Track Code:** 2018-RUAN-68168

**Categories:**

- Mechanical Engineering

**Keywords:**

- Cooling
- Mechanical Engineering
- Solar

Cooling under sunlight has been a challenge for cooling buildings, automobiles, or equipment under direct sunlight. Currently, air conditioning is the best and most widely used cooling method but it requires massive amounts of power. Air conditioning can only do so much for objects exposed under direct sunlight, leading to overheating and major damage to the objects. Another current solution is radiative cooling. This solution uses very expensive parts and is made of metal which interferes with certain signals that could be vital to the company's operation. There is a need for a new cooling technology that is cost effective and efficient.

Researchers at Purdue University have developed a new technology that utilizes radiative cooling. The technology is a metal-free coating for radiative cooling paint. This paint achieves below ambient temperature at night and a good amount of daylight under direct sunlight. This technology is metal-free so it will not interfere with any possible signals the company requires. This technology is also compatible with current commercial paint fabrication processes, so it is easily scalable and adaptable. This new technology could change how rooftops, automobiles, or equipment is cooled in the near future.

**Advantages:**

- Good cooling performance day and night
- Outdoor communication network
- Compatible with current commercial paint fabrication<sup>TM</sup>

**Potential Applications:**

- Commercial and residential rooftops
- Automobiles

**People:**

- Ruan, Xiulin (Project leader)
- Huang, Zhifeng
- Li, Xiangyu

**Intellectual Property:**

**Application Date:** October 3, 2019

**Type:** PCT-Patent

**Country of Filing:** WO

**Patent Number:** (None)

**Issue Date:** (None)

**Application Date:** November 13, 2018

**Type:** Provisional-Patent

**Country of Filing:** United States

**Patent Number:** (None)

**Issue Date:** (None)

**Application Date:** October 3, 2018

**Type:** Provisional-Patent

**Country of Filing:** United States

**Patent Number:** (None)

**Issue Date:** (None)

**Contact OTC:**

Purdue Office of Technology Commercialization

1801 Newman Road

West Lafayette, IN 47906

Phone: (765) 588-3475

Fax: (765) 463-3486

Email: [otcip@prf.org](mailto:otcip@prf.org)