

# **Nighttime Electrical Power Generation via Radiative Cooling**

Stanford researchers have designed a power generation system capable of working at off-grid and at night when solar cells are not effective. By combining a thermoelectric generator with radiative cooling, this system can generate nighttime power density over 2 W/m<sup>2</sup>, outperforming wind and radio frequency energy harvesting. The thermoelectric generator component represents less than 1% of the system footprint area, making this an economically accessible platform.

## **Stage of Research**

- Proof of concept

## **Applications**

- **Off-grid, nighttime power generation**
- Modular energy source:
  - Agricultural, environmental or security sensors
  - Lighting
  - Digital communications

## **Advantages**

- **Low cost, off-grid**
- Nighttime 2.2 W/m<sup>2</sup> power density
  - Outperforms other ambient energy harvesting techniques like wind or radio frequency
  - Daytime performance estimated to be 3-4x higher than nighttime

## **Innovators**

- Shanhui Fan
- Lingling Fan
- Wei Li
- Meir Orenstein
- Weiliang Jin

## **Licensing Contact**

### **Chris Tagge**

Technology Licensing Program Manager

[Email](#)