

Low-cost duality devices will play a key role in incubating new applications

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Robert F. Service wrote an article entitled “Perovskite LEDs begin to shine” (1). A solar cell not only generates electricity but also emits light or heat. As far as we know, duality of physical phenomena can be simply observed in many devices (2). Peltier devices have been used for cooling and heating. Providing the temperature difference between two sides of a Peltier device can generate electric power which is called Seebeck effect. We have tested solar cells not only to generate electricity but also to generate heat for melting snow on the solar cell roof. Current LEDs (Light Emitting Diodes) can be used as sensors or cameras using duality. The physical phenomena or their components always have duality. According to the latest technology, infrared emitting device functions energy harvesting (3). The researchers of duality devices need not only to improve the energy conversion efficiency between emitted light and generated electricity, but also to expand their durability. They must also reduce manufacturing cost as much as possible for incubating real new applications using duality devices.

References:

1. Robert F. Service, Perovskite LEDs begin to shine, Science 07 Jun 2019: Vol. 364, Issue 6444, pp. 918
2. <https://science.sciencemag.org/content/362/6410/35/tab-e-letters>
3. <https://phys.org/news/2017-04-infrared-emitting-device-energy-harvesting.htm>

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