Room temperature materials and its application in e-skin

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Abstract

Thermoelectric materials have played a critical role in the solid-state cooling for the electronics and radio thermoelectric generator for deep space exploration, and shows a promising solution for the self-powering IoT sensor. Bismuth telluride is the classic thermoelectric material, and also the only commercially available one for large-scale application. However, it is limited by the extreme scarcity of tellurium. This talk will address two new room-temperature thermoelectric materials: (1) Mg-based thermoelectric materials by using the electrons as the energy carrier, (2) the gelatin-based thermoelectric materials on the basis the stylistically effect of ionic thermals diffusion and thermogalvanic effect. Finally, the speakers also address the new application of thermoelectric devices for therm-e-skin, which achieves an excellent iso-thermo-regulating performance to target temperature 35 °C in a wide range environment of 10-45 °C.

About the Speaker

Weishu Liu is a professor of Materials Science and Engineering at Southern University of Science and Technology. Currently, he is deputy head of the Department of Materials Science and Engineering. Weishu Liu graduated in Materials Science (MSc-Ph.D, University of Science and Technology Beijing, 2009), and conducted research at Washington Univertsity(2009), Boston College (2010-2012), University of Houston (2013-2015), and Sheatak Inc. (2015-2016). His research topic is thermoelectric materials, devices, and their novel application. He has published over 140 papers in high-reputation journals, including Science, PNAS, Nat. Comm. Energy Environ. Sci., Adv. Mater. etc, with citations over 10000 and H-index of 54. He has been awarded the "Tencent XPlorer Prize 2019".