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Title:	Unexpected superconductivity at nanoscale junctions made on the topological crystalline insulator Pb <sub>0.6</sub> Sn <sub>0.4</sub> Te
Authors:	Das, Shekhar (/jspui/browse?type=author&value=Das%2C+Shekhar) Aggarwal, L. (/jspui/browse?type=author&value=Aggarwal%2C+L.) Aslam, M. (/jspui/browse?type=author&value=Aslam%2C+M.) Gayen, Sirshendu (/jspui/browse?type=author&value=Gayen%2C+Sirshendu) Sheet, G. (/jspui/browse?type=author&value=Sheet%2C+G.)
Keywords:	Exotic phases Discovery Topological Non-trivial systems
Issue Date:	2016
Publisher:	American Institute of Physics
Citation:	Applied Physics Letters, 109(13).
Abstract:	Discovery of exotic phases of matter from the topologically non-trivial systems not only makes the research on topological materials more interesting but also enriches our understanding of the fascinating physics of such materials. Pb <sub>0.6</sub> Sn <sub>0.4</sub> Te was recently shown to be a topological crystalline insulator. Here, we show that by forming a mesoscopic point-contact using a normal non-superconducting elemental metal on the surface of Pb <sub>0.6</sub> Sn <sub>0.4</sub> Te, a superconducting phase is created locally in a confined region under the point-contact. This happens when the bulk of the sample remains to be non-superconducting, and the superconducting phase emerges as a nano-droplet under the point-contact. The superconducting phase shows a high transition temperature T <sub>c</sub> that varies for different point-contacts and falls in a range between 3.7 K and 6.5 K. Therefore, this Letter presents the discovery of a superconducting phase on the surface of a topological crystalline insulator, and the discovery is expected to shed light on the mechanism of induced superconductivity in topologically non-trivial systems in general.
Description:	Only IISER authors are available in the record.
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