

Abstract Submitted  
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**Impact of Crystalline Structure on the Temperature Dependence of Resistivity**<sup>1</sup> YUTONG GUAN, GANG YANG, DONGMING MEI, The University of South Dakota — Since HPGe radiation detectors work under cryogenic temperature, the electrical properties at low temperature are essential for the detector performance. In this study, the resistivity of two types of HPGe, i.e. single crystal from Czochralski growth and poly-crystal from zone refining, was investigated in the temperature range from 4.2 to 100K. It was found that there was a turning point on the resistivity vs temperature curves for both types of crystals. However, the turning points for them were significantly different: 30K for single crystalline while 60K for polycrystalline. In order to explore the reason, microstructures of both types of crystals were investigated by optical microscopy. The results showed a very good agreement between electrical properties and microstructures.

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Yutong Guan  
The University of South Dakota

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