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Thermoelectric Figure-of-merit in Bulk p-type PbTe BO YU, HUI WANG, Boston College, BED POUDEL, GMZ Energy Inc., KENNETH MCENANEY, GANG CHEN, Mass. Institute of Technology, ZHIFENG REN, Boston College, BOSTON COLLEGE, DEPT. OF PHYSICS TEAM, MASS. INSTITUTE OF TECHNOLOGY, DEPT. OF MECHANICAL ENGINEERING COLLABORATION — Lead telluride and its related chalcogenide alloys have been well studied for decades. With various achievements in not only bulk by also in thin films, quantum dots, superlattices, nanowires, etc., they always come up as one of the best thermoelectric materials for middle-range temperature applications. Recently, thallium was reported as a good candidate for band structure engineering in p-type lead telluride ingot system to largely enhance the thermoelectric power factor and hence the dimensionless figure-of-merit (ZT). Here we used mechanical alloying as the approach for large-scale production and achieved ZT value of 1.05 at 300 $^{\circ}$C. The details will be presented in this talk.

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