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**Investigation of the Wiedemann-Franz law in the conducting polymer PEDOT** ANNIE WEATHERS, LI SHI, The University of Texas at Austin, Department of Mechanical Engineering, Austin, Texas, USA, ZIA ULLAH KHAN, OLGA BUBNOVA, XAVIER CRISPIN, Linköping University, Department of Science and Technology, Organic Electronics, SE-601 74 Norrköping, Sweden — The conducting polymer PEDOT:PSS (Poly-3,4-ethylenedioxythiophene polystyrenesulfonate) has been shown to have promising thermoelectric properties for a polymer system, with a reported ZT on the order of 0.3 at room temperature. Previous measurements of the thermoelectric properties has suggested a violation of the Wiedemann-Franz law, with a reported total thermal conductivity less than the estimated electronic contribution. The validity of the Wiedemann-Franz law in these systems has remained an open question, as the charge transport mechanism can be different than in inorganic materials. However, no measurements have been done to measure directly all three thermoelectric properties in the same direction. We present the in-plane thermoelectric properties of suspended PEDOT samples of varying electrical conductivities and discuss the implications of the results on the validity of the Wiedemann-Franz law for conducting polymer systems.

Annie Weathers  
The University of Texas at Austin

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