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Thermoelectric power in a bilayer graphene device CHIEN YUNG-YU, Institute of Physics, Academia Sinica, Taipei, Taiwan, YUAN HONGTAO, Geballe Laboratory for Advanced Materials, Stanford University, Stanford, California 94305, USA, WANG CHANG-RAN, LIN CHUN-HSUAN, LEE WEI-LI, Institute of Physics, Academia Sinica, Taipei, Taiwan, INSTITUTE OF PHYSICS, ACADEMIA SINICA, TAIPEI, TAIWAN TEAM, GEBALLE LABORATORY FOR ADVANCED MATERIALS, STANFORD UNIVERSITY, STANFORD, CALIFORNIA 94305, USA COLLABORATION — There have been great interests on band gap engineering in a bilayer graphene (BLG) device, where inversion symmetry breaking by a perpendicular electric field can give rise to a sizable band gap. In our previous works, we have demonstrated a large enhancement in the thermoelectric power (TEP) associated with the band gap opening in a dual-gated BLG device. It is, therefore, an interesting question to ask whether even larger TEP can be achieved with a larger perpendicular electric field applied. We explored such possibility by utilizing the ionic liquid gating technique in BLG devices. By controlling the side gate voltage of ionic liquid and the bottom gate voltage via SiO_2/Si substrate, large increase of the sheet resistance at charge neutral point was observed suggesting the opening of a band gap. At T = 120 K, TEP increases by more than 44% with a side gate voltage of $\sim$ 1V. The influence of charge puddles to TEP using ionic liquid gating will be discussed.

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