Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supplementary Information

Cross-plane thermoelectric Seebeck coefficients in nanoscale Al_2O_3/ZnO superlattice films

Yo-Seop Yoon[a,⊥], Won-Yong Lee[a,⊥], No-Won Park[a], Gil-Sung Kim[a], Rafael Ramos[b,c], Takashi Kikkawa[b,c], Eiji Saitoh[b,c,d], Sang-Mo Koo[e], Jin-Seong Park[f], and Sang-Kwon Lee[a,*]

[a] Department of Physics, Chung-Ang University, Seoul 06974, Republic of Korea
[b] Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan
[c] WPI Advanced Institute for Materials Research, Tohoku University, Sendai 980-8577, Japan
[d] Department of Applied Physics, The University of Tokyo, Tokyo 113-8656, Japan
[e] Department of Electronic Materials Engineering, Kwangwoon University, Seoul 10897, Republic of Korea
[f] Division of Materials Science and Engineering, Hanyang University, Seoul 04763, Republic of Korea

[*] Address correspondence to sangkwonlee@cau.ac.kr

[⊥] These authors contributed equally to this work

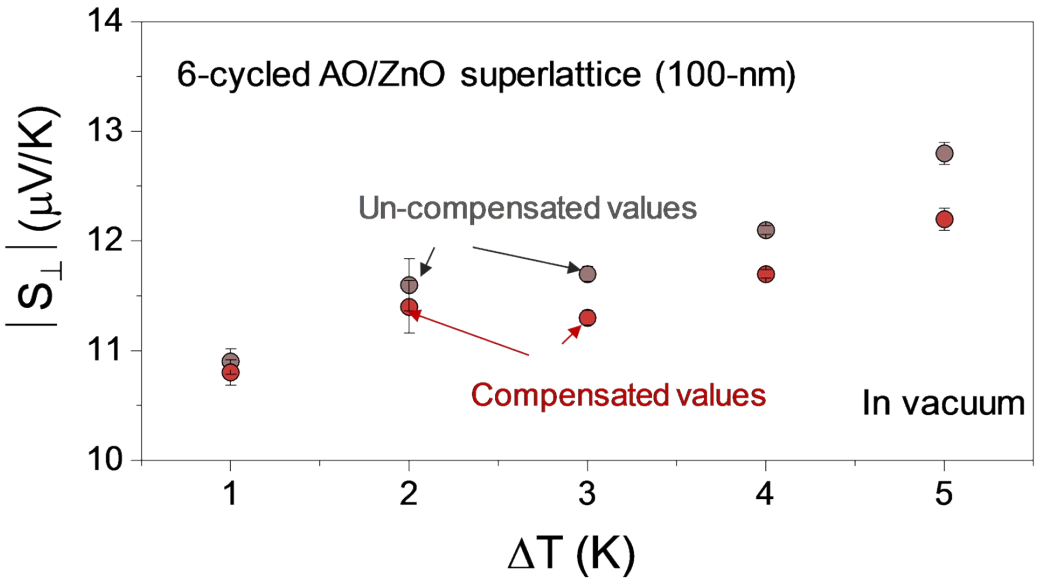

Figure S1 Un- and compensated cross-plane Seebeck coefficients of the films. Un-compensated and compensated cross-plane Seebeck coefficients of the 6-cycled AO/ZnO superlattice films as a function of the temperature difference from 1 to 5 K. All measurements were performed in a vacuum chamber at room temperature. The thickness of the samples was 100 nm. The measured Seebeck coefficients of 100 nm-thick 6-cycled AO/ZnO superlattice film was determined to be ~ 11.4 – 11.8 μV/K with a temperature difference which ranged from 1 to 5 K.

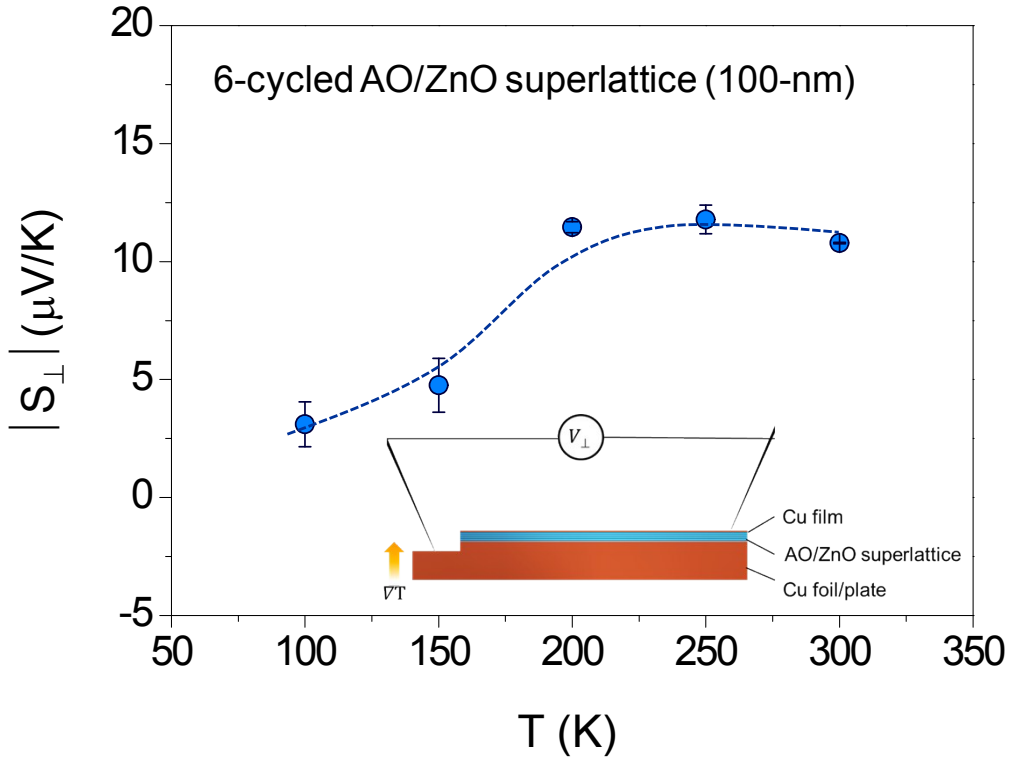

Figure S2 Temperature dependent cross-plane Seebeck coefficient of the films. Cross-plane Seebeck coefficient of 6-cycled AO/ZnO superlattice films as a function of temperature, ranging from 100 to 300 K. All measurements were performed in a vacuum chamber. The thickness of the samples was 100 nm.