

Abstract Submitted  
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**Emergent photovoltage on SmB6 surface upon bulk-gap evolution revealed by pump-and-probe photoemission spectroscopy<sup>1</sup>** YUKI-  
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Tokyo — Recent studies suggest that an exemplary Kondo insulator SmB6 belongs  
to a new class of topological insulators (TIs), in which non-trivial spin-polarized  
metallic states emerge on surface upon the formation of Kondo hybridization gap in  
the bulk. Remarkably, the bulk resistivity reaches more than  $20 \Omega \text{ cm}$  at 4 K, mak-  
ing SmB6 a candidate for a so-called bulk-insulating TI. We here investigate optical-  
pulse responses of SmB6 by pump-and-probe photoemission spectroscopy. Surface  
photovoltage effect is observed below  $\sim 90 \text{ K}$ . This indicates that an optically-active  
band bending region develops beneath the novel metallic surface upon the bulk-gap  
evolution. The photovoltaic effect persists for  $>200 \mu\text{s}$ , which is long enough to be  
detected by electronics devices, and could be utilized for optical gating of the novel  
metallic surface.

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