

Abstract Submitted  
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**Modulation of surface flatness and van der Waals bonding of two-dimensional materials to reduce contact resistance.**<sup>1</sup> DEWU YUE, WON JONG YOO, Sungkyunkwan Univ — Despite that the novel quantum mechanical properties of two-dimension (2D) materials are well explored theoretically, their electronic performance is limited by the contact resistance of the metallic interface<sup>1</sup> and therefore their inherent novel properties are rarely realized experimentally. In this study, we demonstrate that we can largely reduce the contact resistance induced between metal and 2D materials, by controlling the surface condition of 2D materials, eg. surface flatness and van der Waals bonding. To induce the number of more effective carrier conducting modes, we engineer the surface roughness and dangling bonds of the 2D interface in contact with metal. As a result, electrical contact resistance of the metal interface is significantly reduced and carrier mobility in the device level is enhanced correspondingly. [1] D. W. Yue, C. H. Ra, X. C. Liu, D. Y. Lee and W. J. Yoo, *Nanoscale*, 2015, **7**, 825-831

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