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Metal Mediated Exfoliation of Monolayer MoS₂ AMMON JOHNSTON, SAIFUL KHONDAKER, University of Central Florida, Department of Physics — Large area exfoliation of monolayer MoS₂ and other 2D materials using Au has attracted significant interest in recent years due to its promise in obtaining high quality single crystal in a scalable way. It has been suggested that the success of this method lies on the Au-MoS₂ binding energy that is stronger than the interlayer VdW interaction of MoS₂ as well as strain created between the lattice mismatch of Au and MoS₂. However, other metals (Pd, Pt, Cu, Ni, etc. . . .) have been predicted to have a stronger binding energy with MoS₂ than Au, but a successful exfoliation of MoS₂ with other metals remains elusive. Raising question whether the metal-MoS₂ binding energy has any role in the large area exfoliation of monolayer MoS₂. Here, we present the result of our efforts in exfoliating monolayer MoS₂ with metals other than gold (such as Pd, Cu and Ni) along with detailed characterizations.

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