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Ytterbiun-driven strong enhancement of electron-phonon coupling in graphene CHOONGYU HWANG, Pusan Natl Univ, DUCK YOUNG KIM, Carnegie Institution of Washington, DAVID A. SIEGEL, KEVIN T. CHAN, JESSE NOFFSINGER, University of California, Berkeley, ALEXEI V. FEDOROV, Lawrence Berkeley Natl Lab, MARVIN L. COHEN, University of California, Berkeley, BORJE JOHANSSON, Royal Institute of Technology, JEFFREY B. NEATON, ALESSANDRA LANZARA, University of California, Berkeley — The interactions between electrons and phonons attract practical and fundamental interests in graphene, as they can not only govern transport properties, but also realize novel phenomena, such as superconductivity. By using angle-resolved photoemission spectroscopy in conjunction with first principles calculations, we provide an experimental evidence for the strong enhancement of electron-phonon coupling in graphene. Ytterbiun adsorption leads to the enhancement of electron-phonon coupling as much as a factor of 10 with respect to as-grown graphene, resulting in the highest strength ever measured for graphene and suggesting a viable route to the realization of superconducting graphene.

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