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**Spatially-aligned graphene nanoribbon field-effect transistors using Au(788) templates and a Van der Waals-mediated pick-up technique** PATRICK FORRESTER, DANIEL RIZZO, KYUNGHOON LEE, SALMAN KHAN, JOSEPH COSTELLO, HSIN-ZON TSAI, NICHOLAS WERBY, JUAN-PABLO LLINAS, FELIX FISCHER, JEFFERY BOKOR, MICHAEL CROMMIE, Univ of California - Berkeley — Graphene nanoribbons (GNRs) have recently garnered scientific interest due to their exciting electrical properties, acting as a semiconducting alternative to zero-gap graphene. Techniques have been developed to synthesize spatially-aligned, atomically-precise, high aspect ratio GNRs using the terraced structure of Au(788) crystals as a template. Here we report electronic transport measurements on spatially-aligned GNR field-effect transistors (FETs), grown on the stepped surface of atomically clean Au(788) crystals. The FETs were fabricated via a polymer-free pickup method mediated by the Van der Waals interactions between hexagonal boron nitride and the GNRs. We use scanning tunneling microscopy, Raman spectroscopy, and electronic transport measurements to characterized the topographic and electronic properties of the device.

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