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Epitaxial aluminum on hybridized InAs/GaSb quantum wells
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Peking University — Hybridized InAs/GaSb quantum wells (QW) are approved the
existence of helical edge channels. According to the theoretical prediction, the com-
bination with superconductor will lead to superconducting topological phase and re-
alization of Majorana bound state (MBS). Besides, InAs/GaSb material shows a low
Schottky barrier to superconductor, and high quality of superconductor-topological
insulator interface will result in hard induced gap. In recent report [1], under low
temperature of substrate, there is a good lattice match between InAs nanowire and
Al in the same direction. In our lab, we perform aluminum epitaxy on the in-situ
cleaved InAs/GaSb QW with similar methods in our ultra-high vacuum STM sys-
tem. After metal epitaxy, the Al layer can be selectively etched for fabricating the
superconductor-topological insulator junction devices. [1] P. Krogstrup, N. L. B.
Ziino, W. Chang, S. M. Albrecht, M. H. Madsen, E. Johnson, J. Nygård, C. M.
Marcus, T. S. Jespersen, Nature Materials 14, 400 (2015).

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