

# Challenges and Opportunities in Remote Epitaxy for Releasable Epilayers on Graphene

Jeehwan Kim

Massachusetts Institute of Technology, 77 Massachusetts Avenue, Room 3-455B, Cambridge, MA 02139  
[jeehwan@mit.edu](mailto:jeehwan@mit.edu) (617) 253-1948

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## Abstract

In today's talk, I will introduce a remote epitaxy technique that can produce single-crystalline membranes on graphene readily exfoliatable to form freestanding single-crystalline membranes. My group at MIT recently discovered that "any types" of single-crystalline compound materials, such as III-V, III-N, and complex oxides, can be epitaxially grown on graphene-coated substrates. The graphene is sufficiently thin such that crystalline orientation of substrates can be guided by the substrate beneath graphene. The slippery graphene surface allows the epitaxial films to be released from the substrate while the substrate can be reused. At the same time, remote epitaxial films grown on graphene can substantially reduce the density of dislocations. I will discuss how this advanced technology revolutionizes compound semiconductor technologies.

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