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<Invited Speaker>

## Device Applications of Graphene and Their Challenges

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Even though graphene was introduced with a great hope to replace silicon in future, small (or zero) band gap and poor stability have become major challenges in graphene electronics. Especially, rectification and amplification function which are the elemental functions of silicon device, is very difficult to implement without a bandgap.

However, the graphene can still be used in many other device applications if the merits of graphene are creatively utilized. For example, graphene can be applied to almost any kind of substrate. Its conductivity can be varied in some degree using electric field, charge dipole, attached molecules, and many other ways.

Recently, graphene stacked with ferroelectric materials or piezoelectric materials has been actively studied for various device applications. In this talk, various device applications of graphene using hybrid stack or novel device structure will be introduced and their prospect will be discussed.

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