

## **Toward Industrial Applications of Graphene Electrodes**

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There have been many efforts to utilize the outstanding properties of graphene for macroscopic applications such as transparent conducting films useful for flexible/stretchable electronics. However, the lack of efficient synthesis, transfer, and doping methods limited the scale and the quality needed for the practical production of graphene films. In this presentation, we introduce ultra-large scale (~30 inch) synthesis and roll-to-roll transfer of graphene films showing excellent electrical and physical properties suitable for practical applications. Considering the outstanding scalability/processibility of roll-to-roll and CVD methods and the extraordinary flexibility/ conductivity of graphene films, we expect the commercial production and application electrodes replacing the use of ITO can be realized in near future.