

# Commercial Scale Production of CVD Graphene and Graphene Quantum Dots

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Recently, we demonstrated the continuous synthesis of graphene films using 500 mm-wide roll-to-roll processes that enables the production of > 100 m long graphene grown on Cu or Ni foils at a rate of max. 500 mm/min. The etching and transfer processes have been optimized for the applications that are close to markets, including car windshields, bullet proof vests, EUV pellicles, EMI shielding, and gas barriers. Now, *Graphene Square Inc.* is preparing commercial scale production as large as 200,000 m<sup>2</sup>/year to be completed in 2022. In addition, we also developed a real-time assessment tool to examine coverage and quality of graphene on Cu surface, which are crucial for quality control and higher production yield. The scalable synthesis of graphene quantum dots also has been achieved for the massive use in therapeutic applications. In this talk, some emerging applications based on graphene quantum dots will be briefly discussed, targeting the applications to Parkinson's disease, colitis, and kidney diseases.