

# **Laser direct writing of graphene patterns on ceramic from flour ink without a metallic precursor**

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Depositing patterned graphene on ceramic has been challenging due to multiple process steps required. In this paper, a 355 nm wavelength UV picosecond laser was used to irradiate flour slurries deposited on Al<sub>2</sub>O<sub>3</sub> ceramic substrate to form graphene without the need for a metallic precursor. The effect of process parameters including laser power, scanning speed, repetition rate and concentrations of the flour solution on graphene formation was investigated. The result showed that a concentration of 20% flour solution could ideally generate high quality graphene when processed with the picosecond laser at a 1.8 W laser power with 30 to 36 pulses. This low cost, one-step and versatile technique would have a great potential for making high temperature electrical devices.