

**A METHOD AND AN APPARATUS FOR MANUFACTURING A POROUS
GRAPHENE LAYER ACROSS A PRECURSOR MATERIAL LAYER ON A
SUBSTRATE THROUGH THERMALLY LOCALIZED LASER
GRAPHITISATION**

ABSTRACT

The present disclosure provides a method and an apparatus for manufacturing a porous graphene layer across a precursor material layer on a substrate. The method comprises: determining a first temperature threshold and a second temperature threshold, the first temperature threshold being a minimum temperature required for forming the porous graphene layer from a precursor material layer on a portion of the substrate, the second temperature threshold being one at which the substrate is likely to experience thermal damages above this temperature threshold; determining at least one of operating parameters of a light source, wherein exposing the precursor material layer to the light source that is operating under the at least one of the operating parameters causes a temperature of the portion of the substrate adjoining a side of the precursor material layer to maintain below the second temperature threshold and a temperature of the opposite side of the precursor material layer to rise above the first temperature threshold; and generating an a beam of light from the light source to the precursor material layer based on the at least one of operating parameters of the light source to form the porous graphene layer.

Fig. 1