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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

[Continued on next page]

(54) **Title**: METHOD FOR DNA DEFINED ETCHING OF A GRAPHENE NANOSTRUCTURE

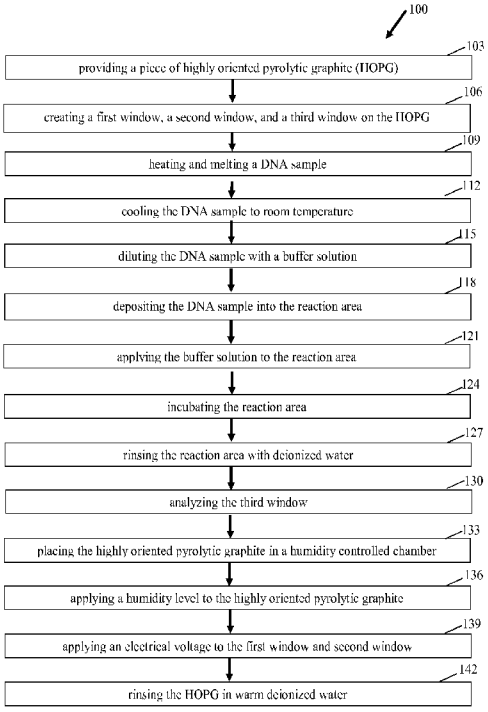

FIG. 1

(57) **Abstract**: The present invention provides a method for etching graphene using a DNA sample of a predetermined DNA shape. The DNA sample is preferably placed onto a reaction area of a piece of highly oriented pyrolytic graphite (HOPG), and both the DNA sample and HOPG are then preferably placed into a humidity-controlled chamber. Humidity is preferably applied to the HOPG to produce a film of water across the surface of the DNA sample. Electrical voltage is also applied to the HOPG to create potential energy for the etching process. After the etching is completed, the reaction area is typically rinsed with deionized water.

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