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- (54)
- Title:**
- METHODS OF MAKING GRAPHENE QUANTUM DOTS FROM VARIOUS CARBON SOURCES

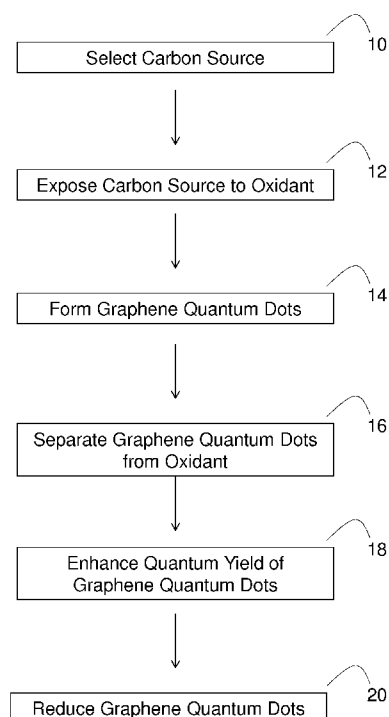


FIG. 1

(57) **Abstract:** Various embodiments of the present disclosure pertain to methods of making graphene quantum dots from a carbon source by exposing the carbon source to a solution that contains an oxidant. The exposing results in the formation of the graphene quantum dots from the carbon source. The carbon sources can include coal, coke, biochar, asphalt, and combinations thereof. The oxidants can include an acid, such as nitric acid. In some embodiments, the oxidant consists essentially of a single acid, such as nitric acid. Various embodiments of the present disclosure also include steps of separating the formed graphene quantum dots from the oxidant by various methods, such as evaporation. In various embodiments, the methods of the present disclosure also include steps of enhancing a quantum yield of the graphene quantum dots, reducing the formed graphene quantum dots, and controlling the diameter of the formed graphene quantum dots.



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