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Scarsbrook et al.

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(54) **MICROWAVE PLASMA REACTOR FOR MANUFACTURING SYNTHETIC DIAMOND MATERIAL**

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(58) **Field of Classification Search**

USPC 118/723 MW; 156/345.41
See application file for complete search history.

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(57) **ABSTRACT**

A microwave plasma reactor for manufacturing synthetic diamond material via chemical vapour deposition, the microwave plasma reactor comprising:

- a plasma chamber;
 - a substrate holder disposed in the plasma chamber and comprising a supporting surface for supporting a substrate on which the synthetic diamond material is to be deposited in use;
 - a microwave coupling configuration for feeding microwaves from a microwave generator into the plasma chamber; and
 - a gas flow system for feeding process gases into the plasma chamber and removing them therefrom;
- wherein the microwave plasma reactor further comprises an electrically conductive plasma stabilizing annulus disposed around the substrate holder within the plasma chamber.

19 Claims, 4 Drawing Sheets

