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- [54] **METHOD FOR SYNTHESIS AND PROCESSING OF CONTINUOUS MONOCRYSTALLINE DIAMOND THIN FILMS**
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- [58] Field of Search **156/603, 610, DIG. 68; 427/38; 423/446; 204/192.12, 192.31; 501/86**

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ABSTRACT

Disclosed is a method for the development of diamond thin films on a non-diamond substrate. The method comprises implanting carbon ions in a lattice-plane matched or lattice matched substrate. The implanted region of the substrate is then annealed to produce a diamond thin film on the non-diamond substrate. Also disclosed are the diamond thin films on non-diamond lattice-plane matched substrates produced by this method. Preferred substrates are lattice and plane matched to diamond such as copper, a preferred implanting method is ion implantation, and a preferred annealing method is pulsed laser annealing.

20 Claims, 6 Drawing Sheets

