

A Study of Diamond Film Growth by Thin Film Coating of Zinc on Si

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Diamond thin films have been deposited on a variety of substrates using different techniques. Hot Filament Chemical Vapor Deposition has been a most commonly used technique due to its simple instrumentation and effectiveness in producing high quality diamond films. However the substrate temperature has to be maintained at relatively high temperature above $\sim 700^{\circ}\text{C}$. This has resulted into use of substrates or coatings with melting point higher than substrate temperature held during the diamond film growth. In this communication we show using Atomic Force Microscopy, Scanning Electron Microscopy and Raman Spectroscopy that even low melting point zinc on scratched Si (100) substrate could produce good quality diamond film at substrate temperature $\sim 750^{\circ}\text{C}$. A liquid substrate can support the growth of diamond film.