

Growth of Single Crystal CVD Diamond

Pate B.B., Yang J., and Butler J.E.

Code 6174, Naval Research Laboratory, Washington DC 20375

Over the last several years, rapid progress has been made towards producing high quality single crystal diamond materials over areas approaching 10 mm square, using chemical vapor deposition (CVD). Linear growth rates exceeding 50 μ m/hr have been achieved. After reviewing the current status of this field, I will report on diamond CVD growth and characterization efforts at the Naval Research Laboratory. Rapid single crystal growth results including defect characterization, impact of high pressure high temperature (HPHT) post-growth treatments, and associated science and technologies that impact production of CVD diamond single crystals for advanced synchrotron radiation applications will be presented.