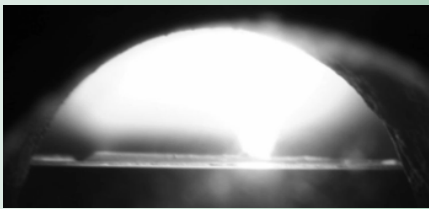


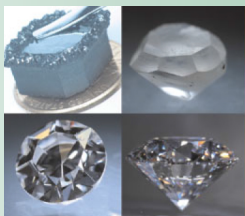
Large Single Crystal CVD Diamond for Science and Technology

Basic Science

One of the key goals of EFree is an improved understanding of crystal growth for creation of large single crystals of materials with extraordinary properties, and development of synthetic techniques. An example is CVD diamond.

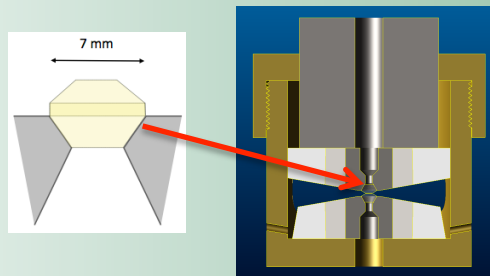


The Microwave Plasma-CVD process (plasma in growth chamber illustrated above) yields single-crystal diamond material that is larger and can be tuned to have greater strength and/or toughness than diamond produced by other methods, and at high growth rates. The process may be tuned to allow variable electronic/optical properties.

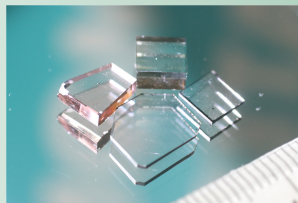
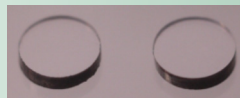


Applied R&D

One aspect of technical development in EFree focuses on the use of CVD diamond anvils for high pressure experiments. Improvements in CVD diamond growth enable novel cell designs for a variety of new types of experiments at extreme conditions.



The optical properties of diamond may be tuned to produce unique high-strength windows and other optical components.

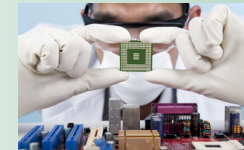
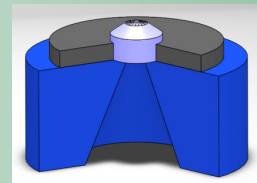


Manufacturing/ Commercialization

Washington Diamonds

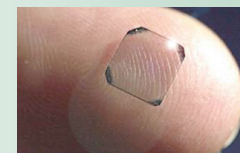
Washington Diamonds has put into production CVD techniques developed at Carnegie. Continued interactions help to optimize material for science and technology applications.

Advanced anvils for
extreme conditions
experiments



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