

**NANO-ENGINEERED CARBON HYBRID SYSTEMS**

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Silicon based technology, the corner stone of today's rapid progress and advancement have some limitations. Painful and expensive as it may, development of newer and more advanced materials is now mandatory. One of the most promising and indeed logical materials to study is CARBON, one row up the periodic table from silicon. In its form as diamond, it is the world's hardest substance but as graphite it is soft enough to be used as pencil lead. In terms of electrical properties, diamond is a wide bang gap semiconductor while graphite and its nanostructures (such as graphene and carbon nanotubes) show outstanding transport properties. Both forms exhibit unique properties but the interesting part is the phase in between them, amorphous carbon (a-C). The a-C film has properties between those of diamond and graphite. Its range of properties can be tuned and modified to suit many applications by our patented Double Bend Filtered Cathodic Vacuum Arc (FCVA) technology. Besides, wide range of properties of carbon allotropes, represents a promising choice for fabrication of functional hybrid and composite materials for many different applications which is the motivation of this study.