

Low temperature nanocluster carbon growth and characterization for field emission electrical propulsion application

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The cathodic arc system can be used to grow nanocarbon thin film and its many facets by varying deposition parameters. The Nanocluster Carbon (NC) thin films are one of the interesting and novel material of interest in the research work. It contains sp² and sp³ carbon bonds, unique mixed phased material. It finds application in large area flexible microelectronics, vacuum nanoelectronic devices, spacecraft and many more. The carbon nanotubes are extensively studied and demonstrated for space related applications. The Nanocluster Carbon thin films in space related applications are not reported. To study and understand

the feasibility of nanocluster carbon thin films, cathodic arc system was used to grow nanocluster carbon under various process parameters and characterized for its various properties including its field emission properties. The continuous cathodic arc system was used in the study for lesser amorphous phase leading to distinct G and D peaks and better clustering. The focus of the research is to study the feasibility of nanocluster carbon in the Field Emission Electrical Propulsion System (FEPP) for a small satellites.

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