

Associate Research Physicist- Diamond Synthesis



Princeton Plasma Physics Lab

Princeton, NJ

Job highlights

Qualifications:

Must have a PhD in plasma science or engineering, or chemical engineering or other closely related field

Experience in plasma processing, for example involving deposition or etching is preferred

Experience with diamond processing is not specifically required

Responsibilities:

The Princeton Plasma Physics Laboratory (PPPL) seeks to fill a post-doctoral research physicist position to perform plasma simulations for the modeling of low-temperature plasma devices for microelectronics and quantum information science. The Associate Research Physicist will join a research team working on this application, comprising experts in experimental and theoretical plasma physics, as well as materials and processing scientists from the PPPL, Princeton University, and the Royal Melbourne Institute of Technology. The candidate will be expected to model the growth of the epitaxial diamond using plasma enhanced chemical vapor deposition (PECVD) reactors. The results of this work will be used for development of new co-doping protocols, recipes, and devices, for diamond quantum sensing applications. The Associate Research Physicist will work in support of a DOE microelectronics grant and may involve collaboration with industry partners. Applicants will have multi-disciplinary experience in material synthesis with proficiency in the fields of plasma physics and chemistry, and computational fluid dynamics (CFD). The applicant will develop a model of a plasma reactor for the chemical vapor deposition (CVD) of diamond. Therefore, experience in modeling of plasma-material interaction with important aspects including plasmas that are not in the state of thermodynamical equilibrium is crucial. Particularly, experience in developing integrated models of plasma reactors for plasma processing and CVD is crucial. Validation and verification of the code will be facilitated through collaboration with research and industry partners, and the candidate should be adept at managing and maintaining these relationships. Through these collaborations they will be asked to apply these codes to model micro-wave (MW) discharges for diamond CVD. The candidate should be proficient on the physics and chemistry which govern these devices, including the importance of self-consistent plasma formation in MW plasmas and impurity transport. A proven record of collaboration with experimentalists and demonstrated impact on experimental programs is desirable. Previous experience working with industry is beneficial.

Contact Igor Kaganovich ikaganov@pppl.gov for additional details.