



第12回 分子システムデバイスリーディングセミナー

第87回 OPERA 研究交流セミナー

第80回 ISIT 有機光エレクトロニクス研究特別室セミナー

第147回 未来化学創造センターセミナー

日時：2013年6月4日 (火) 14:00-

会場：九州大学 総合学習プラザ1F セミナー室 110室

「Low Temperature Diamond Films – Growth & Applications」

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Diamond film has a great interest because of its outstanding optical, electrical, mechanical, and thermal properties. However, high temperatures (800–900°C) normally employed in chemical vapor deposition (CVD) of diamond films limit their application to high melting substrates. Recently, there is a high interest for low temperature diamond deposition which opens new fields like diamond growth on temperature sensitive substrates for infrared reflectance spectroscopy or for ATR prisms [1,2].

During last two decades several attempts were carried out to achieve low deposition temperatures for diamond growth with various results, which differ in continuity (i.e. fully closed or individually separated diamond clusters), morphology (amorphous carbon, nano- or polycrystalline diamond), homogeneity, etc. In general, at low temperature diamond growth (LTDG) usually two main objectives are applied: (i) changed gas chemistry by addition of halogens or oxygen-containing gases and (ii) implementation of modified plasma system.

In my presentation I am going to talk about these attempts focusing on our results at Institute of Physics, AVCR using novel pulsed linear antenna microwave plasma (PLAMWP) CVD system and CO₂ addition into standard CH₄/H₂ gas chemistry [3,4]. Beside technology, it will be shown our applications such as low temperature diamond films for high sensitive infrared reflectance spectroscopy of functionalized diamond nanopowder, or diamond passivation layer and/or diamond coatings as heat spreaders on GaN/AlGaIn HEMT devices [5], and optically transparent in-plane H-terminated diamond-based impedance sensors for in-vitro monitoring of cell growth.

主催：九州大学 分子システムデバイス国際リーダー教育研究センター

共催：九州大学 最先端有機光エレクトロニクス研究センター, 財団法人九州先端科学技術研究所 (ISIT)

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