



IBS Center for Multidimensional Carbon Materials



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Diamond: a Brilliant Wide Bandgap Semiconductor

Aug 22 | Bldg. 101
Wed 14:00 | Seminar Room on the 1st floor

Abstract:

Diamond is a semiconductor with extreme and unique properties which enable applications for high power and high frequency electronics, radiation detectors, electron emitters for ultra high voltage vacuum switches and traveling wave tube cathodes, and thermionic emitters for energy conversion. Diamond as a wide bandgap semiconductor shows outstanding electronic properties and the highest known thermal conductivity. Its unique properties include excellent electron emissivity from hydrogen terminated surfaces, room temperature UV exciton emission and optical defect centers considered for quantum communication.

The tremendous progress in diamond applications is now limited by materials challenges: reducing defect and impurity densities in substrates and epitaxial layers, understanding and limiting dopant compensation, preparing stable dielectric interfaces, preparing low resistance contacts, and heterostructure formation for high mobility devices and III-V integration. As research progresses on all of these topics, new device concepts will be developed based on the outstanding, extreme and unique properties of diamond materials.

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You are cordially invited to attend!

Special Guest Seminar