

ANALYTICAL SEMINAR

Professor Bob Hamers

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Diamond: from Catalysis to Sensing

As one of the most chemically stable materials known, diamond enjoys a unique place in chemistry. The surface chemistry of diamond can be manipulated to provide new capabilities, yielding applications in biology, catalysis, and sensing. In this talk I will discuss recent advances in the surface chemistry of diamond. One example will demonstrate that diamond can be used as a solid-state source of electrons in water; these solvated electrons are potent chemical reducing agents, able to reduce CO₂ to CO and for reduce N₂ to NH₃ under ambient conditions. Although diamond chemistry requires deep ultraviolet light, its properties can be enhanced by forming metal-diamond nanocomposites and even plasmonic nanostructures. A second example will highlight the use of nanodiamond as an ultra-stable chemical probe, using optically detected magnetic resonance (ODMR).

Thursday,
Feb. 2
12:15 pm
Room
1315