

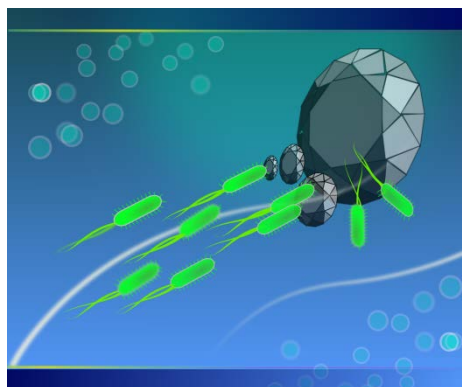
Diamond nanoparticles: new jewelry for chemistry, biology and medicine

Sabine Szunerits

*Institut de Recherche Interdisciplinaire, (IRI, USR-3078), Parc de la Haute Borne, 50
avenue de Halley, BP 70478, 59658 Villeneuve d'Ascq, France
Email : Sabine.Szunerits@iri.univ-lille1.fr*

Integrating biological components with nanomaterials for applications in drug delivery or medical diagnostics has been widely explored using a spectrum of approaches. Recent studies have shown that nanomaterials enabling drug delivery, such as cancer therapeutics, could revolutionize the field of pharmacology and help tackle diseases at a molecular level. Among the nanomaterials being considered, nanoscale diamond particles also referred to as nanodiamonds (NDs) are very promising.¹

This presentation will discuss the different surface functionalization strategies employed by us to make NDs suitable for biological applications.²⁻⁴ They are based on “click” chemistry approaches and the use of dopamine derivatives. The interest of glycan-functionalized NDs as potent *E. coli* anti-adhesives will be in particular shown. Some recent results on the use of boronic acid modified NDs as potential antiviral therapeutics will be presented.⁵



References :

1. Mochalin, V. N.; Gogotsi, Y., *J. Am. Chem. Soc.* **2009**, 131, 4594.
2. Barras, A.; Szunerits, S.; Marcon, L.; Monfilliette-Dupont, N.; Boukherroub, R., *Langmuir* **2010**, 26, (16), 13168-72.
3. A. Barras, F. A. Martin, O. Bande, J.-S. Baumann, J.-M. Ghigo, R. Boukherroub, C. Beloin, A. Siriwardena, S. Szunerits, *Nanoscale*, **2013**, 5, 2307
4. Barras, A.; Lyskawa, J.; Szunerits, S.; Woisel, P.; Boukherroub, R., *Langmuir* **2011**, 27, 12451.
5. M. Khanal, T. Vausellin, A. Barras, O. Bande; K. Turcheniuk, M. Benazza, Zaitsev, C. M. Teodurescu, R. Boukherroub, A. Siriwardena, J. Dubuisson, S. Szunerits, *ACS Mater.& Inter.*, **2013**, 5, 12488-12498