Polymer photonic crystal dye lasers as optofluidic cell sensors

Dye doped hybrid polymer lasers are implemented as label free evanescent field biosensors for detection of cells. It is demonstrated that although the coverage is irregular and the cells extend over several lattice constants, the emission wavelength depends linearly on the fraction of the surface covered by the HeLa cells used as model system. Design parameters relating to photonic crystal sensing of large objects are identified and discussed. The lasers are chemically modified to bind cells and molecules with flexible UV activated linker molecules.

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