

Public Abstract

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Department:Biological Engineering

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Title:Molecularly Imprinted Polymer Labeled with Quantum Dots for Detection of Nitroaromatic Explosives

Detection of explosives is an important aspect of security and defense, both locally and abroad. A proposed method for detecting explosive compounds, either as a residue or emitted from an explosive device, makes use of molecularly imprinted polymers coupled with fluorescent quantum dots. If the explosive is encountered in the environment, the molecularly imprinted polymer is capable of recognizing and binding the compound. Once bound to the polymer material, the nitroaromatic explosive then quenches the fluorescence of nearby quantum dots integrated into the imprinted polymer. This fluorescence quenching response can then be measured, making detection of the explosive possible. Studies using this method indicated that it is feasible for detection of nitroaromatic compounds in water, but performed poorly in detecting airborne explosives.