

Abstract Submitted
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Sensitive detection of explosives via fluorescence quenching and pattern recognition technique¹ ABHISHEK KUMAR, ROBINSON ANANDAKATHIR, Center for Advanced Materials, University of Massachusetts Lowell, JUNG HWAN CHO, PRADEEP KURUP, Department of Civil and Environmental Engineering, University of Massachusetts Lowell, JAYANT KUMAR, Center for Advanced Materials, University of Massachusetts Lowell — There is significant interest in developing chemical sensors for detection of trace explosives. Optical sensors are inherently very sensitive and have potential to detect explosive vapors at room temperature and ambient conditions. There is a need to develop materials for optical sensors to fabricate a sensor array which can provide required sensitivity and selectivity. Here, we report an optical sensor array combined with pattern recognition technique for sensitive and selective detection of explosives. The optical sensor array consists of four conjugated polymers. These polymers have good quantum yield of fluorescence and large Stoke's shift. We have shown that by employing pattern recognition technique, the presence of nitro containing explosive TNT (2,4,6-trinitro toluene) can be discriminated with other common chemical intereferants in 60 seconds.

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