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Turn-On Fluorescent Sensor from Indolium Salt for Cyanide Detection

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A highly sensitive turn-on fluorescent sensor for cyanide was developed based on benzylidenes containing methylindolium group. Three benzylidene derivatives were synthesized from the condensation reactions between benzaldehyde derivatives and methyleneindoline. Only one of these three derivatives shows strong visible blue fluorescence selectively to cyanide which was clearly observed in submicromolar range. The detection of cyanide with this compound was optimized in aqueous media using a non-ionic surfactant, Triton X-100 and sonication technique to give very low limit of detection in subnanomolar range. The compound was also developed into a paper-based and gel-based sensing kits for on–site naked eye detection of cyanide in micromolar range under black light illumination (360 nm).

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