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## Highly Selective Visual Detection of Fe<sup>3+</sup> at ppm Level

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### Abstract

A new turn-on fluorescence sensor 4-pyridin-2-ylmethyleneaminophenol (PYAP) has been developed for the detection of Fe<sup>3+</sup> in methanol. About 200-fold increase in fluorescence intensity was observed for PYAP in presence of 2 equivalent of Fe<sup>3+</sup>. However, other metal ions e.g. Na<sup>+</sup>, K<sup>+</sup>, Ba<sup>2+</sup>, Mg<sup>2+</sup>, Al<sup>3+</sup>, Cr<sup>3+</sup>, Co<sup>2+</sup>, Ni<sup>2+</sup>, Cu<sup>2+</sup>, Zn<sup>2+</sup>, Cd<sup>2+</sup>, Pb<sup>2+</sup> and Ag<sup>+</sup> induced only a minor change in the fluorescence property for the PYAP. Interestingly, the detection limit was found to be in ppm level with a rapid response time of minutes. The naked eye low-level detection of Fe<sup>3+</sup> ion by the occurrence of the red fluorescence makes PYAP a potential Fe<sup>3+</sup> sensor in methanol. Moreover, the synthesis of this particular chemosensor is facile, scalable to multi gram quantity and also the starting materials are cheap, which makes this suitable for practical application compared to other Fe<sup>3+</sup> sensors.

**Keywords:** Turn on fluorescence, Metal sensor, Fe<sup>3+</sup>, Schiff base, Visual detection.

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