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## Antibiotics Mediated Facile One-Pot Synthesis of Gold Nanoclusters as Fluorescent Sensor for Ferric Ions

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**Abstract:** In this paper, the cheap, easily obtained small antibiotic molecule of vancomycin was employed as reducer/stabilizer for facile one-pot synthesis of water exhibited a bluish fluorescence emission at 410 nm within a short synthesis time about 50 min. Based on the strong fluorescence quenching due to electron transfer mechanism by the introduction of ferric ions( $\text{Fe}^{3+}$ ), the Van-AuNCs were interestingly designed for sensitive and selective detecting  $\text{Fe}^{3+}$  with a limit of  $1.4\mu\text{mol L}^{-1}$  in the linear range of  $2\text{-}100\mu\text{mol L}^{-1}$  within 20 minutes. The Van-AuNCs based method was successfully applied to determine  $\text{Fe}^{3+}$  in tap water, lake water, river water and sea water samples with the quantitative spike recoveries from 97.50% to 111.14% with low relative standard deviations ranging from 0.49% to 1.87%, indicating the potential application of this Van-AuNCs based fluorescent sensor for environmental sample analysis.

**Key words:** antibiotic, gold nanoclusters, fluorescent, sensor, ferric ions

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