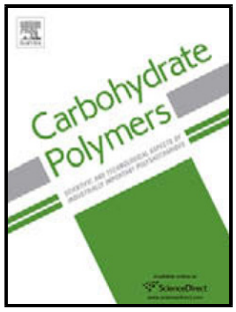


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# Characterization of a fluorescent hydrogel synthesized using chitosan, polyvinyl alcohol and 9-anthraldehyde for the selective detection and discrimination of trace $Fe^{3+}$ and $Fe^{2+}$ in water for live-cell imaging

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## Highlights

- A chitosan based hydrogel with superior fluorescence properties has been synthesized.
- The emission intensity of the hydrogel enhanced remarkably for $Fe^{3+}$ and strongly quenched for $Fe^{2+}$.
- The fluorometric detection limits for $Fe^{3+}$ and $Fe^{2+}$ were found to be 0.124 and 0.138 nM respectively.
- The probe is also promising as a selective sensor of $Fe^{3+}$ and $Fe^{2+}$ in the fluorescence imaging of living cells.

## Abstract

A three-dimensional fluorescent hydrogel based on chitosan, polyvinyl alcohol and 9-anthraldehyde (ChPA) has been successfully designed and synthesized for the selective detection and discrimination of $Fe^{3+}$ and $Fe^{2+}$ in aqueous environment. The unique characteristics of ChPA