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# Highly selective and sensitive ratiometric fluorescent polymer dots for detecting hypochlorite in 100 % aqueous media

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## Abstract

Hypochlorite ( $\text{ClO}^-$ ), as a momentous reactive oxygen species (ROS), is highly desirable due to it associated with a number of human diseases. Therefore, the development of simple and convenient water-soluble ratiometric fluorescent probes is of great significance. In this work, water-soluble ratiometric fluorescent polymer dots (FPDs) for detecting  $\text{ClO}^-$  were prepared via incorporation of reversible addition-fragmentation chain transfer radical polymerization (RAFT), grafting technique and coprecipitation strategy. Upon the addition of  $\text{ClO}^-$ , due to the intramolecular heavy atom effect (HAE) by chlorine (Cl), the fluorescence of fluorescein units in FPDs was significantly quenched, while another reference fluorophore (P2) in FPDs keeps constant. Furthermore, the FPDs exhibited excellent sensitivity (detection limit: 2.2 nM) and selectivity, good water-solubility. In addition, FPDs was successfully utilized to detect  $\text{ClO}^-$  in tap water and drink water. It implies that the nanoprobe has the great potential applications in biological sensing and imaging.

**Keywords:** Ratiometric fluorescent probe, Hypochlorite, Polymer dots, RAFT

## 1. Introduction

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