

## A Ratiometric Inorganic Phosphate Sensor Based on CdSe/ZnS QDs and Rhodamine 6G-Doped Nanofibers

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**Abstract :** In this study, a ratiometric inorganic phosphate sensor was fabricated by a double layer of the rhodamine 6G-doped nanofibers and the CdSe/ZnS QDs-captured polymer. In which, CdSe/ZnS QDs with emission wavelengths of 595nm were synthesized and ligands on their surface were exchanged with mercaptopropionic acid (MPA). The synthesized MPA-QDs were combined with the mixture of sol-gel of 3-glycidoxypropyl trimethoxysilane (GPTMS), 3-aminopropyltrimethoxysilane (APTMS) and polyurethane (PU) to build a layer for sensing inorganic phosphate. Another sensing layer was of nanofibers doped R6G which were produced from poly(styrene-co-acrylonitrile) by electrospinning. The ratio of fluorescence intensities between rhodamin 6G (R6G) and CdSe/ZnS QDs exposed at different phosphate concentrations was used for calculating a linear phosphate concentration range of 0-10mM.

**Keywords :** nanofiber, QDs, ratiometric phosphate sensor, rhodamine 6G, sol-gel

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