

# Developing properties of polydiacetylene/zinc oxide nanocomposite for detection of anionic surfactant

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**Abstract:** Colorimetric response of polydiacetylene (PDA) to external stimuli can be controlled by integrating with ZnO nanoparticles. The PDA/ZnO nanocomposite exhibits colorimetric response to organic acids and bases, rendering it to be used as a chemical sensor. In this study, we extend utilization of the nanocomposite to detect Sodium Dodecyl Sulfate (SDS). While PDA is found to change color upon the addition of SDS, the PDA/ZnO nanocomposite maintains its initial color. To enhance the colorimetric response to SDS of the nanocomposite, Hexadecyltrimethylammoniumbromide (CTAB) with the concentration ranging from 0.1 to 5 mM is added to the system. The nanocomposite with 0.5 to 5 mM CTAB changes color when subjected to SDS. Depending on CTAB concentrations, blue-to-red or yellow-to-red color transitions are observed. Furthermore, the desired detection concentration can be controlled by varying CTAB concentrations added into the system.

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