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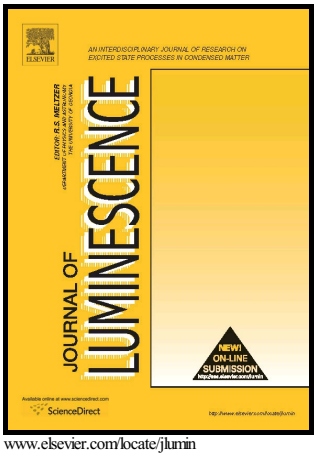

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Fluorescent silver nanoclusters capped by polyethyleneimine with different molecular weights: universal synthesis and application as a temperature sensor

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Abstract

In this paper, we developed a universal, applicable and simple synthetic method of Ag nanoclusters capped by polyethyleneimine (PEI) with different molecular weights (AgNC-PEIs), including Mw 600, 1300, 1800, 2000, 10000, 25000, 70000, and 750000. Using formaldehyde as the sole reducing agent, silver nanoclusters could be successfully prepared by using these templates. Subsequently, several characterization techniques were employed to investigate the properties of AgNC-PEIs, and the results suggested that these AgNC-PEIs had similar sizes, structures, and optical features. However, besides the common characteristics, different temperature sensitivities were found for these nanoclusters, in which AgNC-PEI 25000 was proper to be applied as a temperature sensor. With increasing