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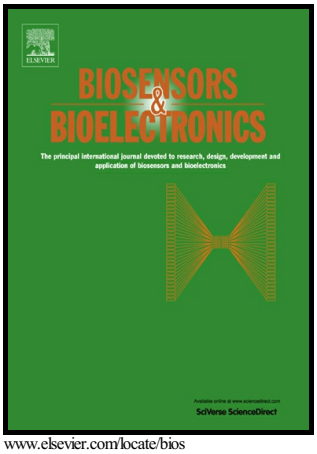

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Simple and Highly Selective Detection of Arsenite Based on the Assembly-Induced Fluorescence Enhancement of DNA Quantum Dots

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Abstract

Novel fluorescent DNA quantum dots (QDs) were synthesized by hydrothermal treatment of G-/T-rich ssDNA at relatively low reaction temperature. The obtained DNA QDs demonstrate unique optical properties, maintain the basic structure and biological activities of ssDNA precursors, which makes the DNA QDs able to specifically bind with arsenite, driving the $(GT)_{29}$ region suffer conformation evolution and form well-ordered assembly rather than random aggregations. We speculate that the strong inter-molecule interaction and efficient stacking of base pairs stiffen the assembly structure, block the nonradiative relaxation channels, populate the radiative decay, and thus making the assembly be highly emissive as a new