

Supporting Information

Hydrogen Peroxide Displacing DNA from Nanoceria: Mechanism and Detection of Glucose in Serum

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Table S1. The sequences of DNA used in this work

DNA	Sequences (from 5' to 3') and modifications
Alexa-DNA	TCA CAG ATG CGT-Alexa Fluoro 488
FAM-A ₅	FAM-AAA AA
FAM-T ₅	FAM-TTT TT
FAM-C ₅	FAM-CCC CC
FAM-G ₅	FAM-GGG GG
FAM-A ₁₅	FAM-AAA AAA AAA AAA AAA
FAM-A ₃₀	FAM-AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA
FAM-A ₄₅	FAM-AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA AAA

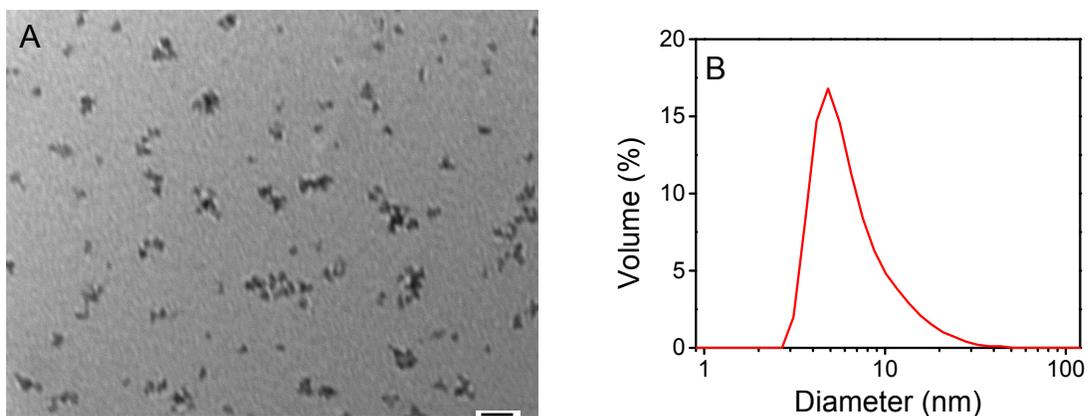


Figure S1. TEM image (A) and DLS diameter (B) of the nanoceria sample used in this work. The scale bar in (A) is 20 nm.

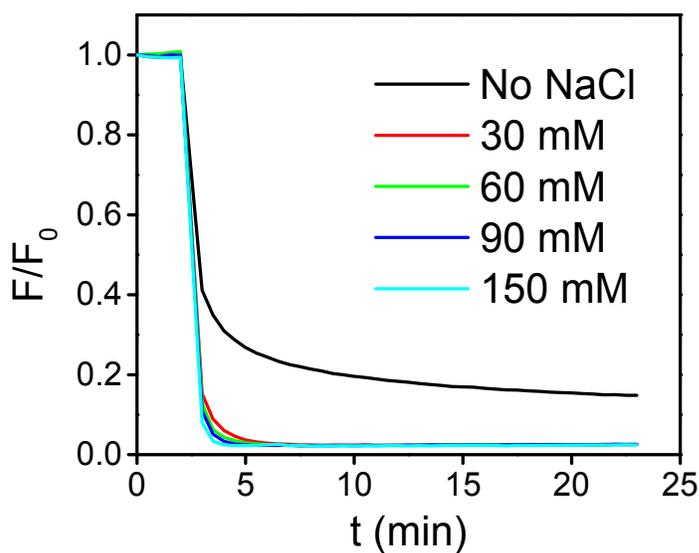


Figure S2. Kinetics of FAM-A₁₅ DNA (50 nM) adsorption by nanoceria as a function of NaCl concentration. Nanoceria was added at 2 min and the fluorescence was normalized based on the intensity of the free DNA.

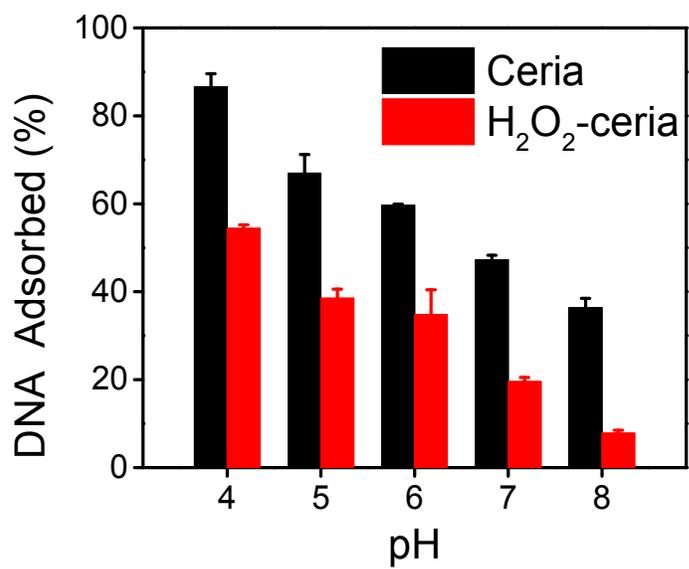


Figure S3. DNA adsorption capacity as a function of pH values by normal nanoceria and H₂O₂ treated nanoceria. The error bars represent standard deviation from three measurements.

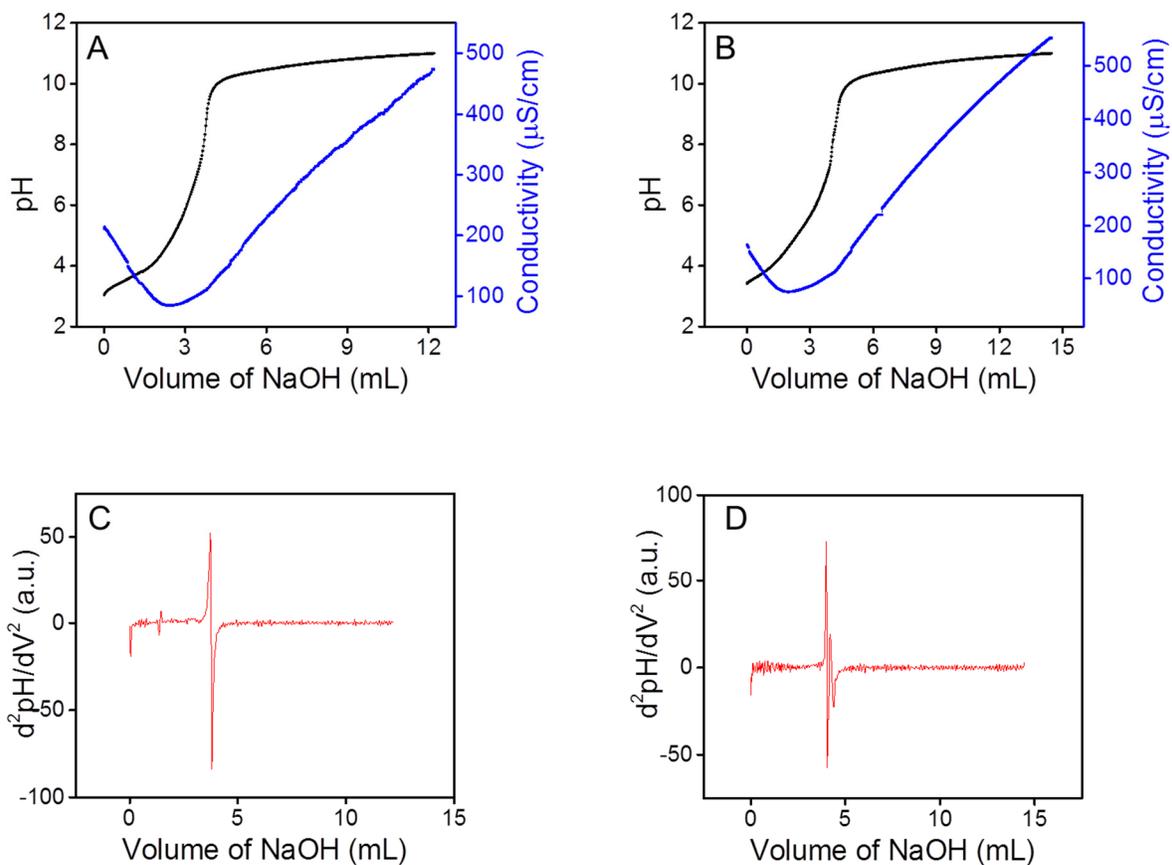


Figure S4. pH and conductivity curves and nanoceria (A) and H_2O_2 treated nanoceria (B). (C) and (D) are the corresponding second derivative of curve (A) and (B), respectively, to determine the pK_a values.

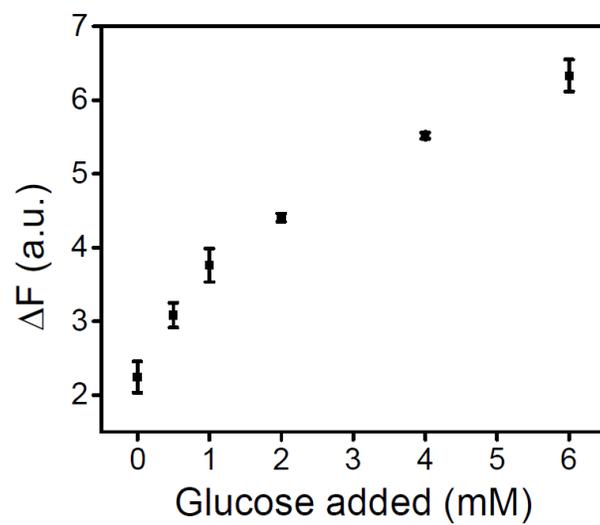


Figure S5. Titration of glucose into serum sample to determine the glucose concentration using the DNA/nanoceria based sensor.