

Electronic Supplementary Information

Highly sensitive and selective detection of silver(I) ion using nano-C₆₀ as an effective fluorescent sensing platform

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Experimental Section

Chemically synthesized OND labeled with FAM was purchased from TaKaRa Biotechnology (Dalian) Co., Ltd. (Dalian, China). DNA concentration was estimated by measuring the absorbance at 260 nm. All the other chemicals were purchased from Aladin Ltd. (Shanghai, China) and used as received without further purification. The water used throughout all experiments was purified through a Millipore system.

Transmission electron microscopy (TEM) measurements were made on a HITACHI H-8100 EM (Hitachi, Tokyo, Japan). Fluorescent emission spectra were recorded on a RF-5301PC spectrofluorometer (Shimadzu, Japan).

Oligonucleotide sequences are listed as follows:

P_{Ag} (FAM-labeled ssDNA probe for Ag^+):

5'-FAM-CTC TCT TCT CTT CAT TTT TCA ACA CAA CAC AC-3'.

Nano- C_{60} was prepared as follows: In a typical experiment, 10 mg of C_{60} was dissolved in 8 mL of toluene. Then the solution was added to 48 mL of acetonitrile dropwise under stirring. Then a large amount of khaki precipitates appeared. The resulting precipitates were washed with acetonitrile by centrifugation twice first, and then redispersed in 30 mL of water and sonicated for 30 min for characterization and further use.

TEM measurements were made on a HITACHI H-8100 EM (Hitachi, Tokyo, Japan) with an accelerating voltage of 100 kV. The sample for TEM measurements was prepared by placing a dilution of the colloidal solution on a carbon-coated copper grid and drying at room temperature.

Excitation was at 480 nm, and the emission was monitored at 515 nm. The total volume of each sample for fluorescent measurement was 400 μ L in 10 mM 3-(N-morpholino)propanesulfonic acid (MOPS) buffer containing 50 mM $NaNO_3$ (pH 7.0). The volume of nano- C_{60} used for each fluorescence quenching is 20 μ L. All the experiments were carried out at room temperature (about 25 $^{\circ}$ C) if not specified.