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Resolving distinct conformations of spectrally similar silver-DNA nanoclusters using electrokinetic flows JACKSON DEL BONIS-O'DONNELL, University of California Santa Barbara, DEBORAH FYGENSON, Department of Physics, University of California Santa Barbara, SUMITA PENNATHUR, Department of Mechanical Engineering, University of California Santa Barbara — Silver-DNA nanoclusters (Ag:DNA) are hybrid fluorescent macromolecules in which a silver superatom is stabilized by segments of single stranded DNA in aqueous solution. Recently, electrokinetic separations in microchannels have proven useful for measuring the size and charge of different Ag:DNA emitters stabilized by the same sequence of DNA. Small (50-100pL) fluorescent sample plugs are electrokinetically injected down a 30 mm long, 20 μm deep silica channel in the presence of a buffered background-electrolyte. Fluorophores contained within the injected plug travel at different velocities and thus separate down the length of the channel due to their differences in electrophoretic mobility. Diffusion measurements are also performed in situ by watching the time evolution of a stationary fluorescent sample plug. In the current work, the above techniques are applied to Ag:DNA stabilized by different sequences of DNA designed to adopt similar structures: a 12 cytosine single-stranded loop. Microfluidic separation measurements reveal the presence of multiple, spectrally similar Ag:DNA for different sequences, distinguished by their electrophoretic mobilities. Our results show that both versions of the 12C hairpin motif produce multiple fluorescent species each with different

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