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Fluorescent DNA-bound Ag nanoclusters PATRICK O'NEILL, LOURDES VELAZQUEZ, KIM WEIRICH, DEBORAH FYGENSON, University of California Santa Barbara — Few-atom fluorescent Ag nanoclusters self-assemble on short, synthetic DNA strands, and exhibit sequence and structure dependent fluorescence ranging from the blue to the near infrared. Here we report UV excitation as a ubiquitous feature of these emitters. Each emitter thus has two excitation peaks: a visible peak which is cluster-dependent, and a UV peak which has the same wavelength for all DNA-bound Ag clusters. This UV peak corresponds to resonant absorbance by the DNA bases, and produces the same emission spectra as visible excitation, suggesting energy transfer from the DNA bases to the Ag cluster. We make use of this UV excitation to image the emitters in unstained polyacrylamide gels, and show that electrophoresis can be used to create a pure solution of green DNA:Ag11 clusters from an inhomogeneous red solution of DNA:Ag>12 clusters.

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