Electronic Supplementary Material (ESI) for Nanoscale.

Structural shift of DNA template between hairpin and dimer tunes the emission color of DNA-templated AgNCs

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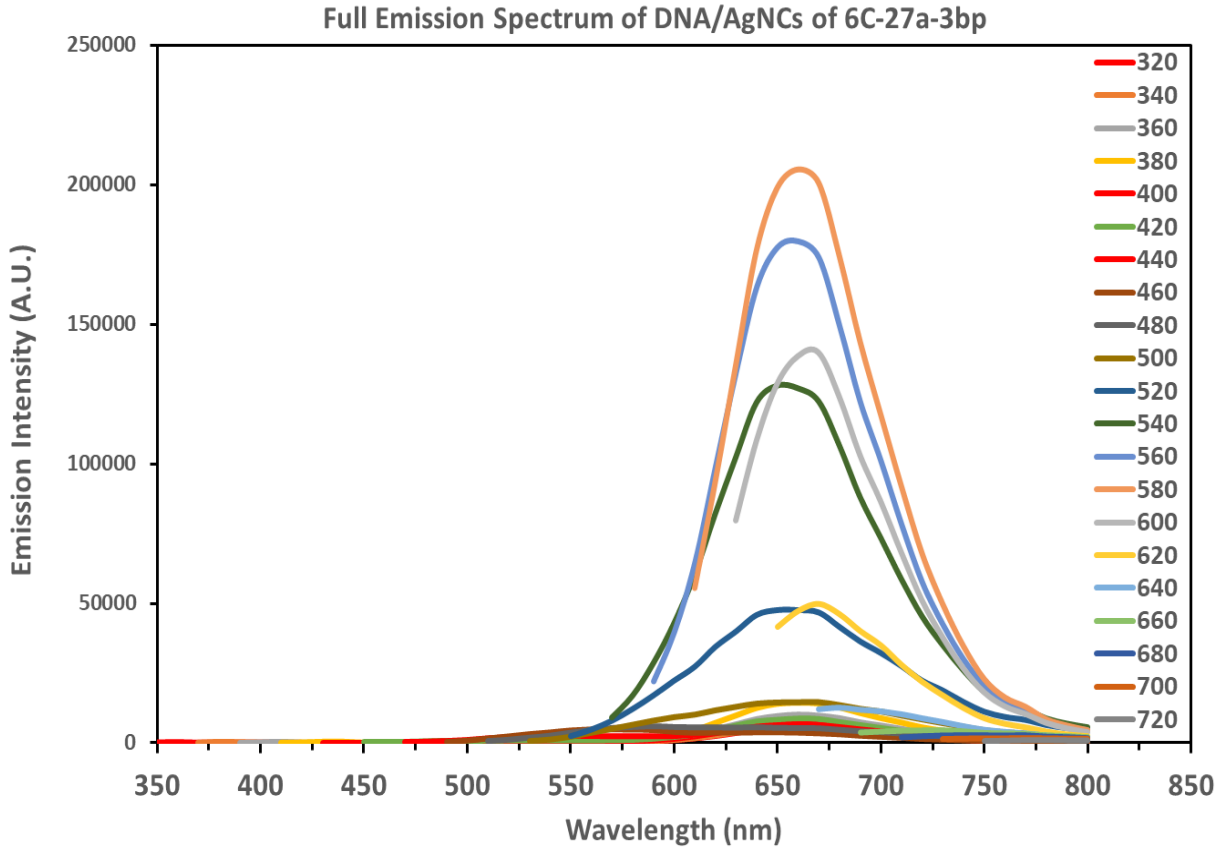
Supplementary Information

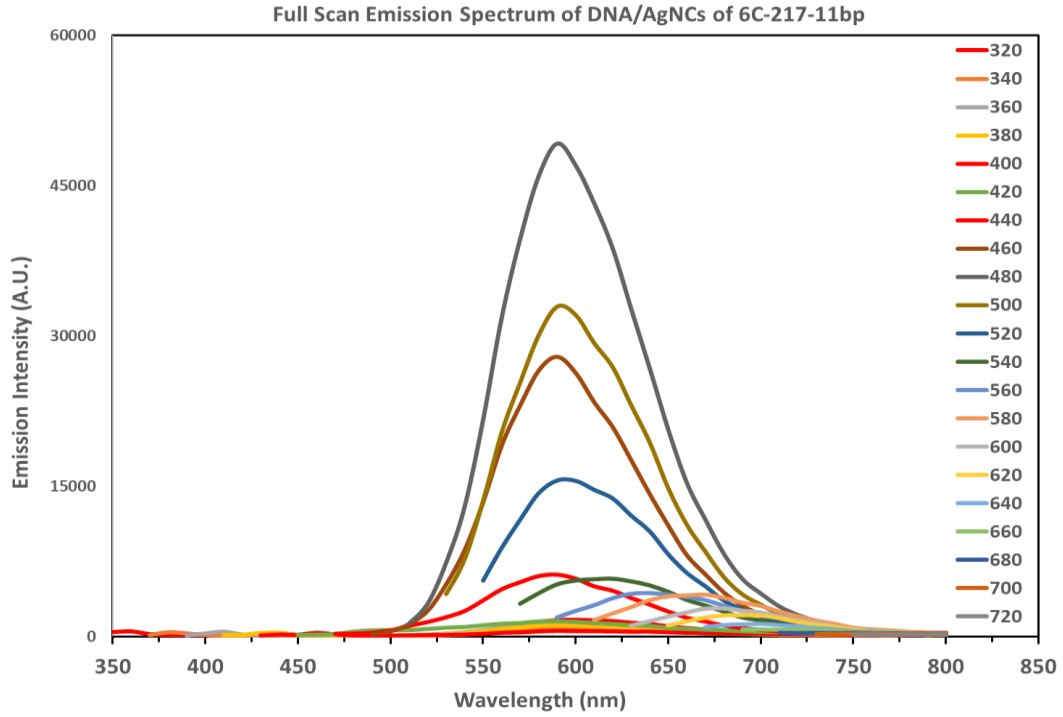
Figures 1-11

Supplementary Figure 1



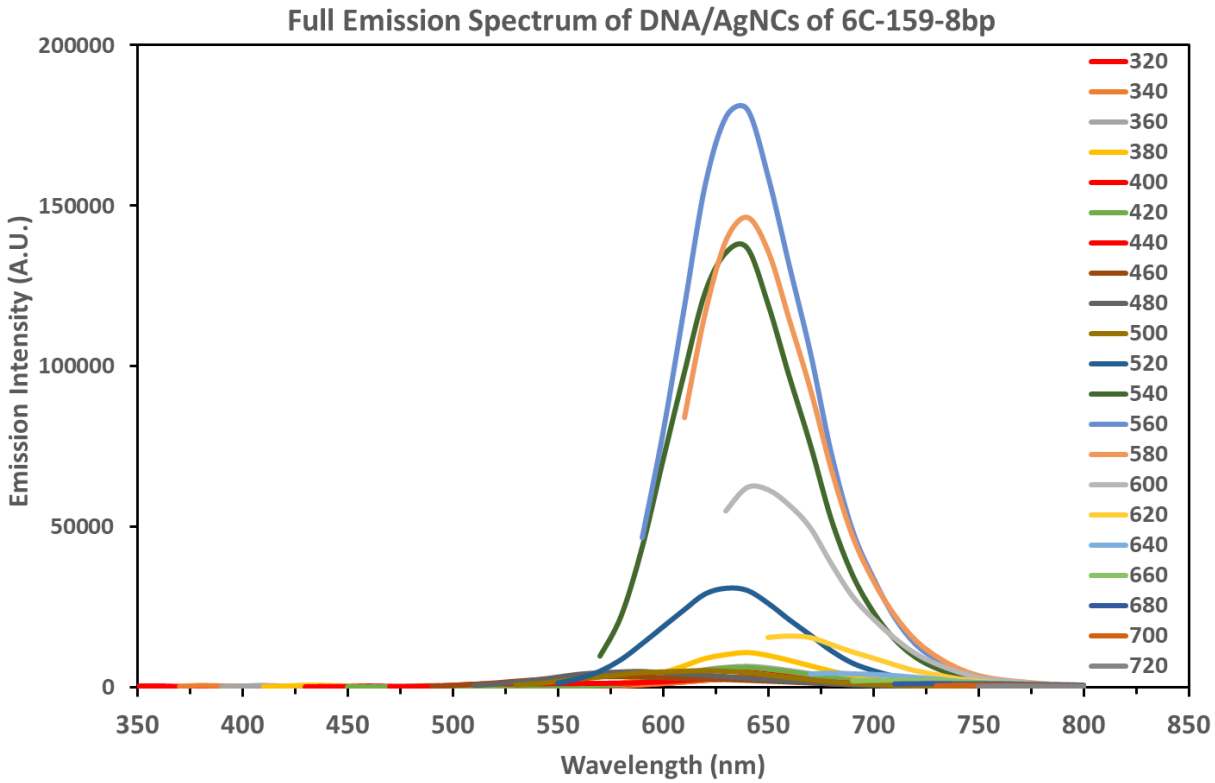
Supplementary figure 1. Emission spectra of 6C-27a-3bp (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral homogeneity in emission maximum indicates the presence of single type of AgNCs.

Supplementary Figure 2



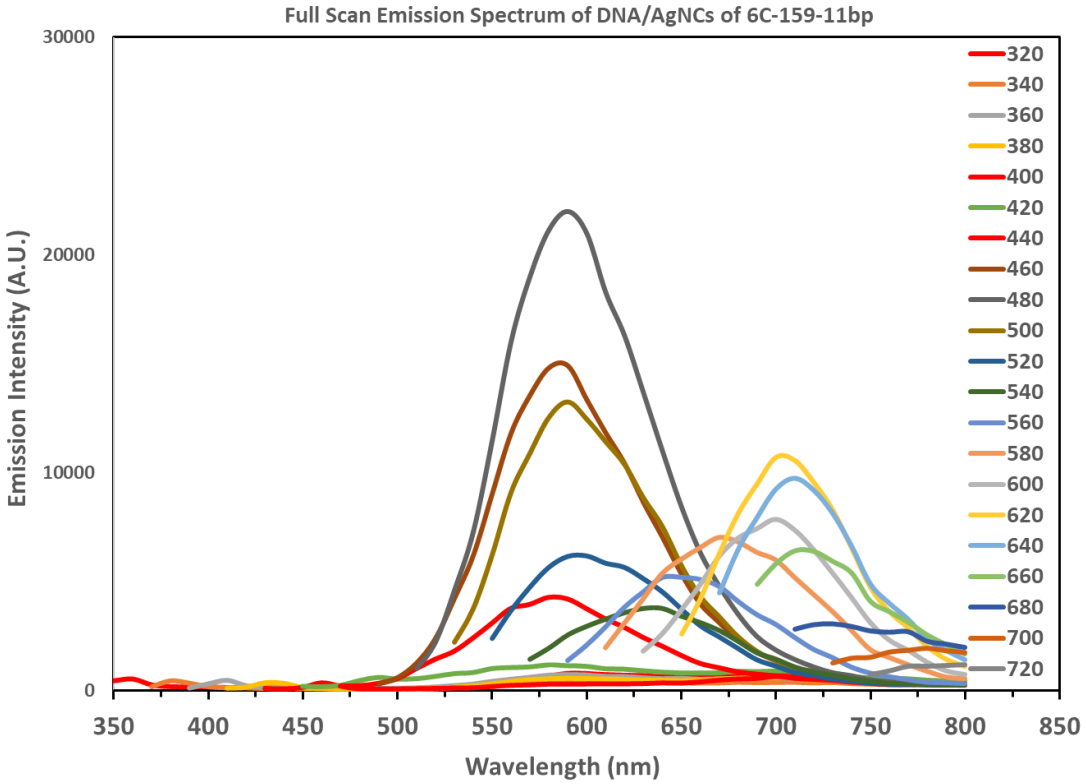
Supplementary figure 2. Emission spectra of 6C-217-11bp (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral heterogeneity in emission maximum indicates the presence of one type of AgNCs, with one being the dominant at Ex/Em 480/590 nm.

Supplementary Figure 3



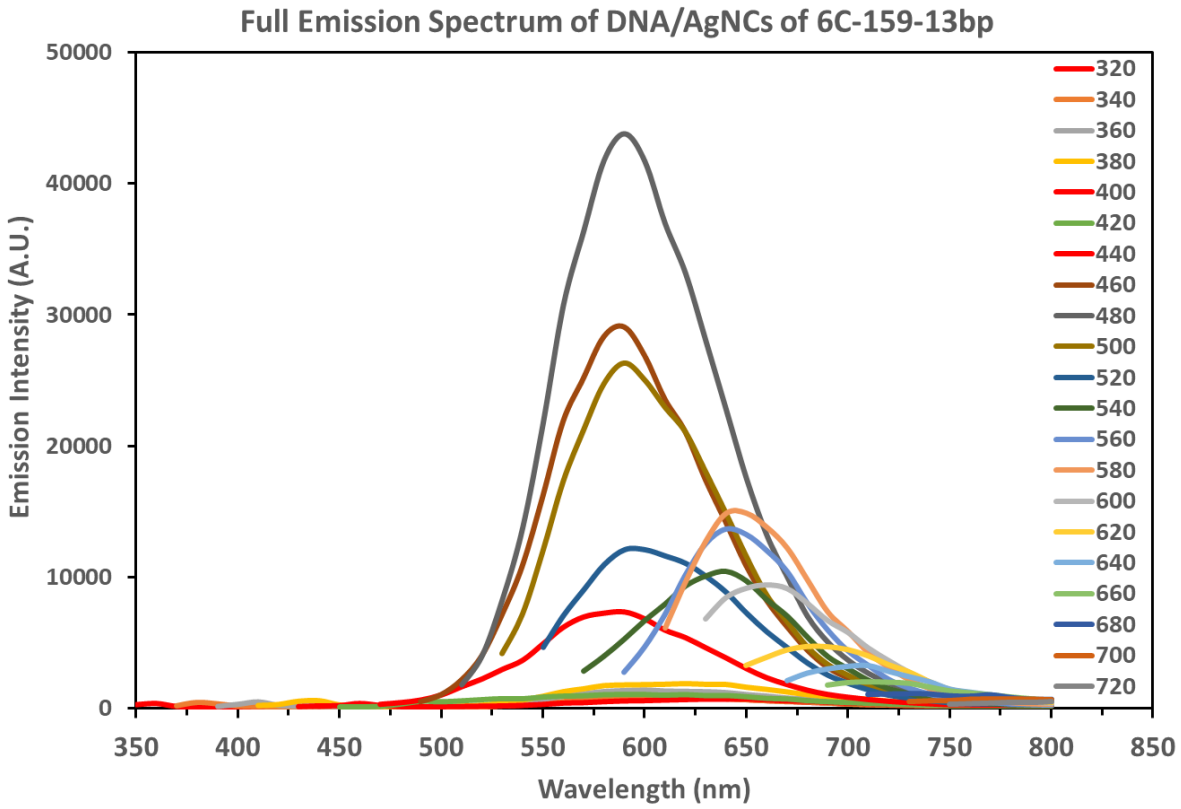
Supplementary figure 3. Emission spectra of 6C-159-8bp (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral homogeneity in emission maximum indicates the presence of single type of AgNCs.

Supplementary Figure 4



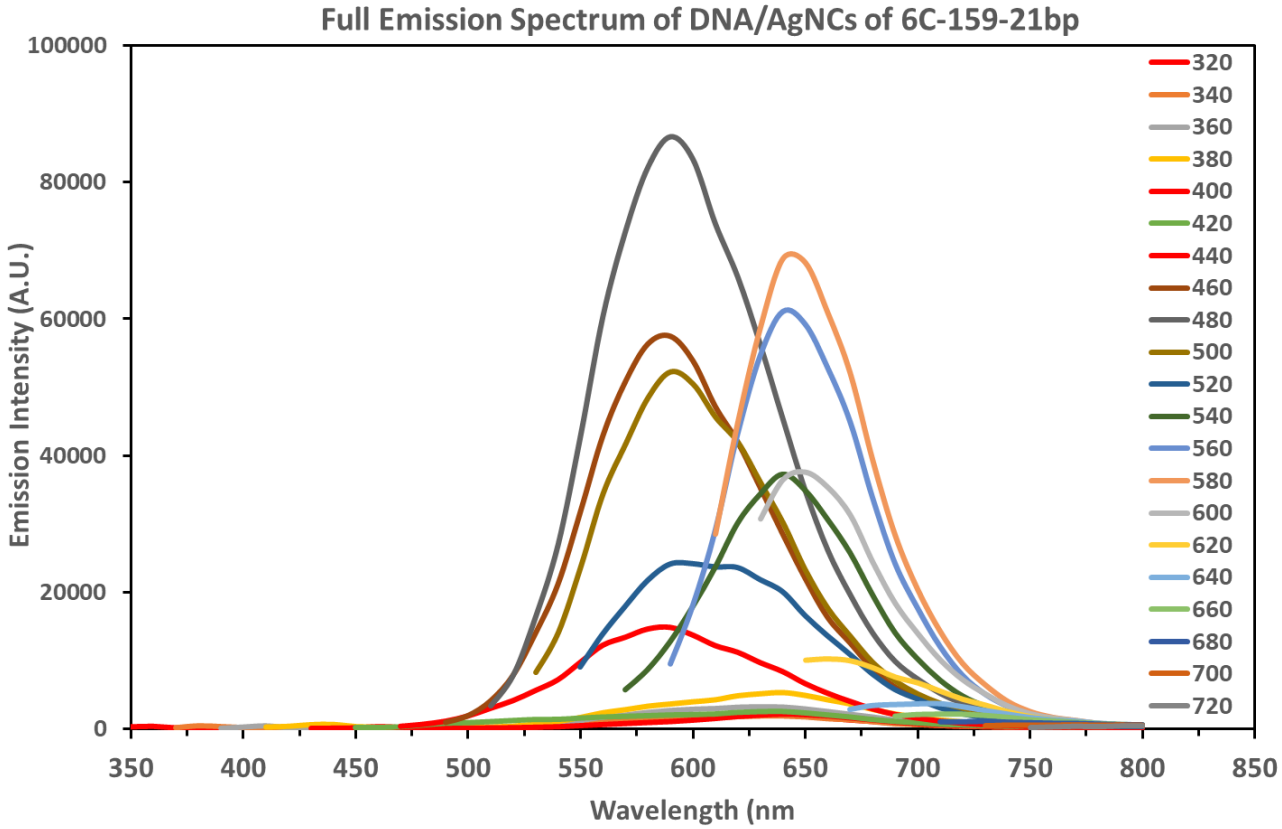
Supplementary Figure 4. Emission spectra of 6C-159-11bp (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral heterogeneity in emission maximum indicates the presence of at least two types of AgNCs, with one being dominant at Ex/Em 480/590 nm. The second emission peak with Ex/Em at 580/660 nm can also be seen. Another peak appears at Near Infrared emission at Ex/Em 620/710 nm but this could not be visualized on the gel.

Supplementary Figure 5



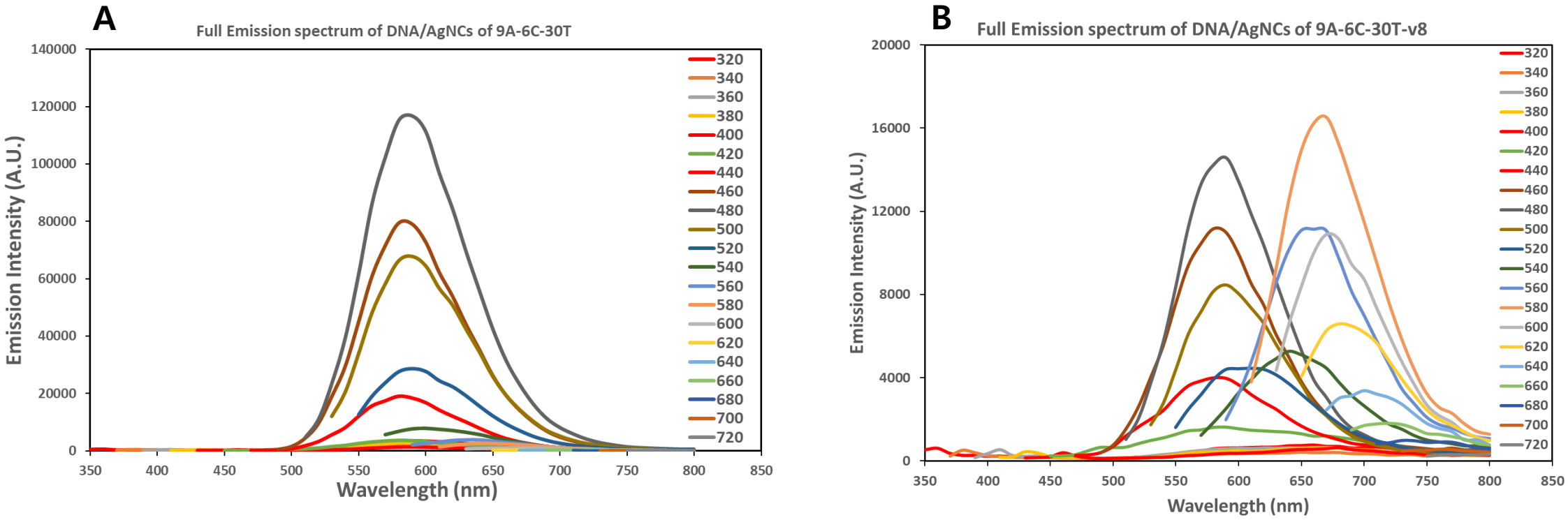
Supplementary Figure 5. Emission spectra of 6C-159-13bp (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral heterogeneity in emission maximum indicates the presence of at least two types of AgNCs, with one being the dominant at Ex/Em 480/590 nm. The second emission peak with Ex/Em at 580/660 nm can also be seen.

Supplementary Figure 6



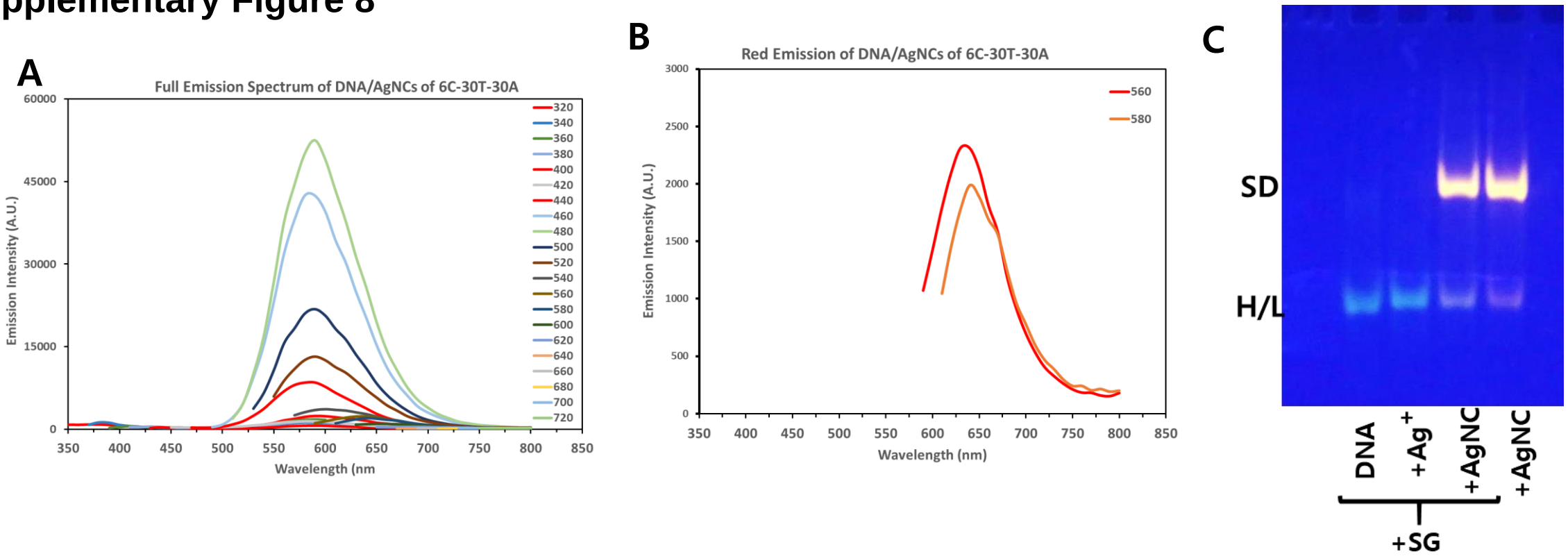
Supplementary Figure 6. Emission spectra of 6C-159-21bp (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral heterogeneity in emission maximum indicates the presence of at-least two types of AgNCs, with one being the dominant at Ex/Em 480/590 nm. The second emission peak corresponds to Ex/Em 580/660 nm.

Supplementary Figure 7



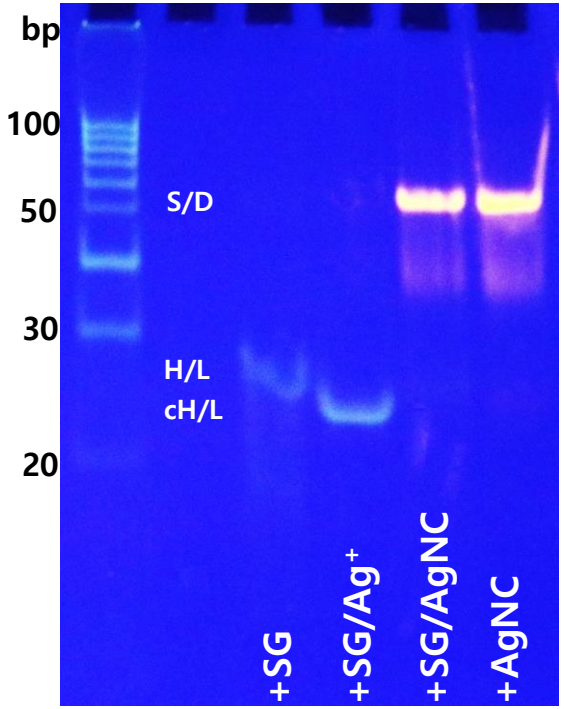
Supplementary Figure 7. A) Emission spectra of 9A-6C-30T (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The dominant AgNC emits at Ex/Em 480/590 nm. B) Emission spectra of 9A-6C-30T-v8 (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20nm steps. The spectral heterogeneity in emission maximum indicates the presence of two types of AgNCs, with one being the dominant at Ex/Em 480/590 nm and second one with Ex/Em at 580/660 nm.

Supplementary Figure 8



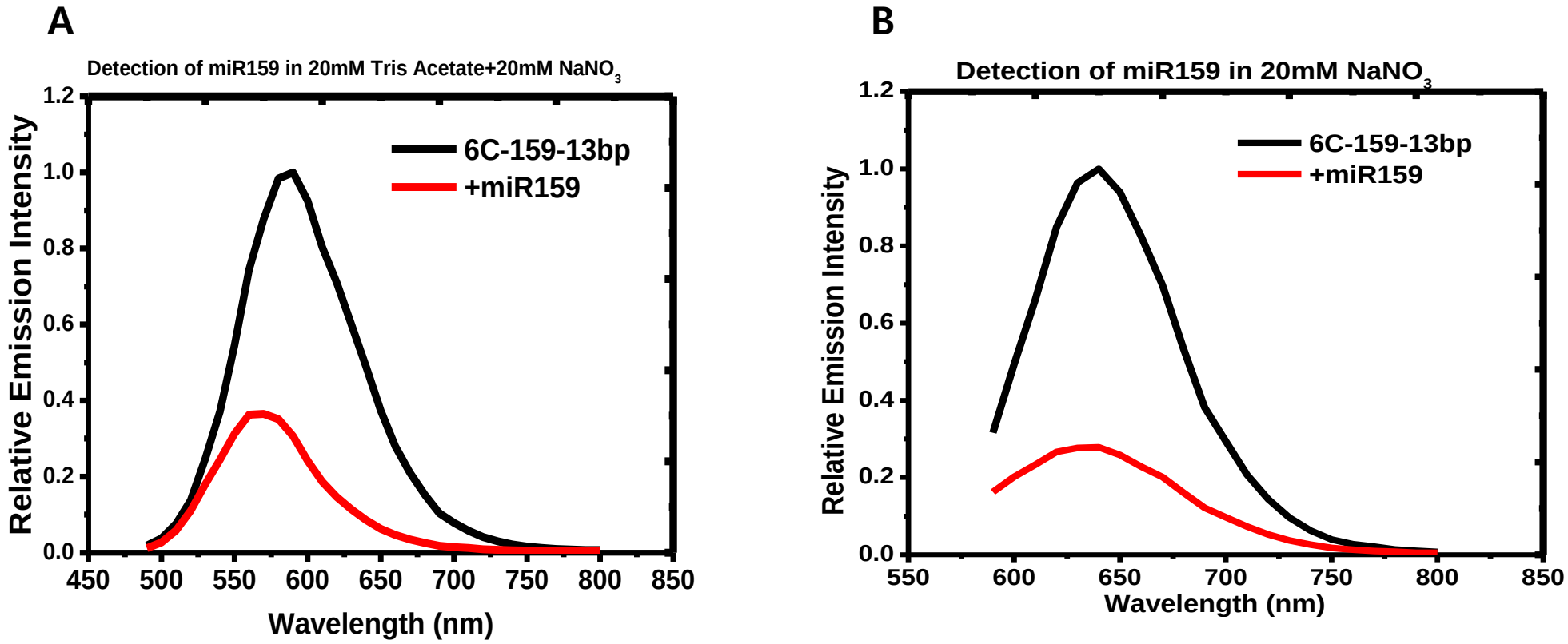
Supplementary Figure 8. A) Emission spectra of 6C-30T-30A (3.75 µM). The spectra were recorded by exciting from 300-720 nm in 20 nm steps. The spectral heterogeneity in emission maximum indicates the presence of two types of AgNCs, with one being the dominant at Ex/Em 480/590 nm. B) The minor emission peak corresponds to Ex/Em 580/660 nm has been enlarged from A. C) Native gel electrophoresis of the DNA/AgNCs templates 6C-30T-30A. Samples were prepared either untreated or added with $AgNO_3$ only or with $AgNO_3$ and $NaBH_4$ before running the gel electrophoresis experiment. The DNA bands were visualized either with SG or AgNCs or both. SD: self-dimer DNA, H/L: anchor-loop DNA template, SG: SYBR Gold dye.

Supplementary Figure 9



Supplementary Figure 9: Native gel electrophoresis of the 9A-6C-30T DNA/AgNCs templates with 2X SYBR Gold compare to Figure 2B for visualization of only DNA template structure without addition of A. Samples were prepared either untreated or added with $AgNO_3$ only or with $AgNO_3$ and $NaBH_4$ before running the gel electrophoresis experiment. The DNA bands were visualized either with SYBR Gold (SG), native AgNCs fluorescence, or both. SD: self-dimer DNA, H/L: hairpin-loop, cH/L: compact hairpin-loop.

Supplementary Figure 10



Supplementary Figure 10: miRNA detection by 6C-159-13bp under varying salt and buffer conditions.

A) miRNA detection was performed in the presence of 20 mM Tris Acetate buffer (pH 7.5) and 20 mM $NaNO_3$ Emission intensity was measured at Ex/Em 460/590 nm. B) miRNA detection was performed in the presence of 20 mM $NaNO_3$. Emission intensity was measured at Ex/Em 560/640 nm