# Gold nanolenses on DNA origami substrates for surface-enhanced Raman scattering

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Surface-enhanced Raman scattering exploits the enhancement of the electromagnetic field in close vicinity of plasmonic nanostructures, enabling characterization of analytes at the single-molecule level. The nanometer-scale spatial arrangement of plasmonic metal nanoparticles and analyte molecules has a significant effect on the observed signal enhancements and represents a great challenge in the technique.
In our group DNA origami is used to create scaffolds for the precise positioning of individual gold nanoparticles and analyte molecules (Fig. 1). Sensitivities higher than for respective nanoparticle dimers are to be expected for gold nanolenses, employing defined rows of 3 differently-sized gold nanoparticles. In finite difference time domain (FDTD) calculations we estimate the attainable electromagnetic field enhancements in the synthesized systems. Ultimately we aim to develop a versatile platform for various SERS applications.

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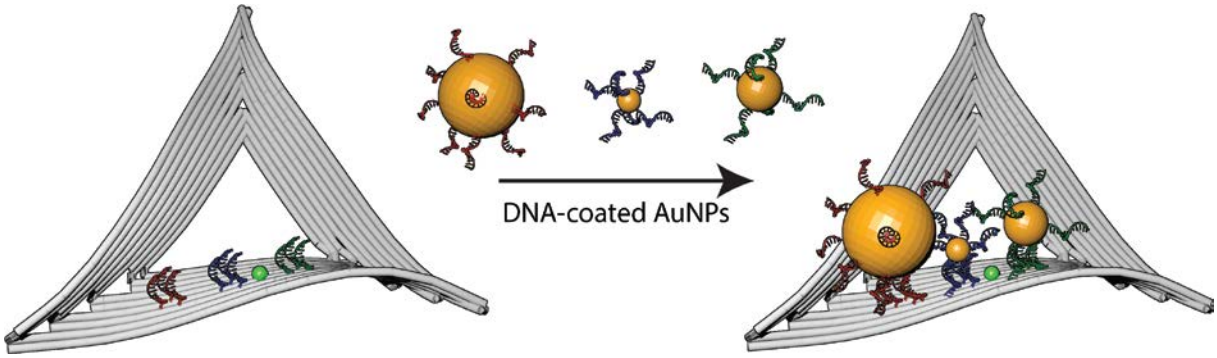


***Figure 1:*** *Gold nanoparticles constituting the nanolens are assembled by DNA origami scaffold*