New Hybrid Plasmonic Nanostructures and Their Applications

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The continuous search for new hybrid plasmonic nanostructures is of continuous interest in nanotechnology. Recent advances and novel applications of hybrid plasmonic nanostructures will be discussed:

1. Self-assembly of DNA/Au NP hybrid nanotubes and chains, exhibiting chiroselective properties, will be presented.
2. Switchable DNA machines composed of plasmonic NPs (catenanes, rotaxanes, tweezers) that reveal switchable ON-OFF fluorescence properties will be presented.
3. Different applications of plasmonic nanoparticles will be addressed:
   a) The application of hemin/G-quadruplex and the cysteine-mediated aggregation of Au NPs as auxiliary probe to detect DNA and aptamer-ligand complexes and to probe telomerase activity.
   b) The use of luminescent Ag nanoclusters as versatile probes for the development of DNA sensors, aptasensors and sensors for explosives.
   c) The imprint of photosensitizer recognition sites into bis-aniline-crosslinked Au NPs for enhanced photoelectrochemistry.