

Gold nanoparticles (AuNPs) stand out in nanotechnology with unique properties compared to bulk materials and small molecules, leading to diverse applications in various fields due to properties like high surface area, size-dependent effects, and specialized optical and catalytic behaviors. Recently, the emerging click chemistry technique has captured significant research interest, offering a versatile and efficient approach to chemical reactions and molecular modifications. This study elucidates a method to produce controlled, monodisperse alkyne functionalized gold nanoparticles via a technique called pulsed laser ablation in liquids (PLAL). Furthermore, a technique is presented to describe a method of assembling "clickable" Gold-nanoparticle (AuNP) functionalized with alkyne groups, which can be used as a building block for conjugation with azide-functionalized molecules via copper-free azide-alkyne [2+3] cycloaddition, i. e. a click reaction. We intend to employ this method to anchor these "clickable" AuNPs onto DNA origami structures.