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Additive nanomanufacturing of metallic nanostructures through a kick-and-place approach (Conference Presentation)

Chenglong Zhao (/profile/notfound?author=Chenglong_Zhao).

[Author Affiliations +](#) ()

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Abstract

We investigated a mechanism for quick release and transfer of gold nanoparticles (GNPs) from a soft substrate to another substrate under laser illumination. The heating of GNPs on a soft substrate with a continuous-wave laser causes a rapid thermal expansion of the substrate, which can be used to selectively release and place GNPs onto another surface. In-plane and out-of-plane nanostructures are successfully fabricated using this method. This rapid release-and-place process can be used for additive nonmanufacturing of metallic nanostructures under ambient conditions, which paves a way for affordable nanomanufacturing and enables a wide variety of applications in nanophotonics, ultrasensitive sensing, and nonlinear plasmonics.

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