

Plasmonic nanoparticle chain in a light field: a resonant optical sail

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Abstract

Optical trapping and driving of small objects has become a topic of increasing interest in multidisciplinary sciences. We propose [1] to use a chain made of metallic nanoparticles as a resonant light sail, attached by one end point to a transparent object and propelling it by the use of electromagnetic radiation. Driving forces exerted on the chain are theoretically studied as a function of radiation's wavelength and chain's alignments with respect to the direction of radiation. Interestingly, there is a window in the frequency spectrum in which null torque equilibrium configuration, with minimum geometric cross section, corresponds to a maximum in the driving force.

References

- [1] S. Albaladejo, J. J. Sáenz and M. I. Marqués, *Nanoletters* **11**, 4597 (2011)

Figures

