

Laserové centrum HiLASE Vás zve na seminář

Review of Blister-Based Laser-Induced Forward-Transfer in Relation to The Underlying Mechanisms and Velocity Control of Removed Particles

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Blister-Based Laser-Induced Forward-Transfer (BB LIFT) is a new method of particle transfer capable of projecting complex and fragile particles into a beam.^{1,2} This development will allow the study and transfer of particles which have hitherto been too fragile to promote into a collimated gas phase molecular beam. The particles are mechanically removed due to deformation of the surface caused by an ns-fs laser pulse. The influence of laser pulse duration (fs to ns) upon the mechanism of blister formation has been investigated. Furthermore, the effects of these mechanisms upon the velocity of the C60 fullerenes is studied and a methodology for controlling the velocity from 1-100ms⁻¹ is explored. Whilst displaying control of the particle velocity a brief analysis of the removed particles is also explored to ensure the complexity of the particles remains unchanged due to transfer.

This technique is proving to be capable of transferring a large variety of particles at various velocities without sustaining damage and in a beamlike fashion. Thus, potentially leading to new methods of product manufacturing and particle analysis.

1. Bulgakov, A. V. et al. Laser-induced transfer of nanoparticles for gas-phase analysis. *J. Opt. Soc. Am. B* 31, C15 (2014).

2. Goodfriend, N. T. et al. Laser pulse duration dependence of blister formation on back-radiated Ti thin films for BB-LIFT. *Appl. Phys. A Mater. Sci. Process.* 122, 1–9 (2016).

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