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Original Article

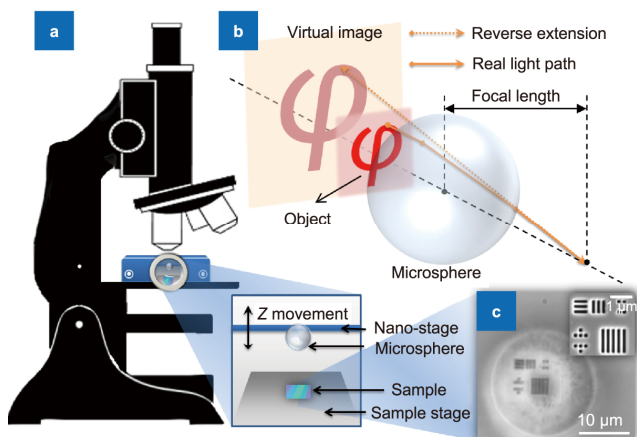
Remote-mode microsphere nano-imaging: new boundaries for optical microscopes 170001

Lianwei Chen, Yan Zhou, Mengxue Wu and Minghui Hong

Enlightened by the sharp focusing of transparent microsphere in laser illuminated lithography and the idea of the reversible nature of light, Prof Hong's team proposed the microsphere magnification design. Theoretical, the interaction between the microsphere and sample structure enriches the information carried in the propagating electromagnetic wave, which was then captured by an optical detector. Such elegant and effective design only requires small changes to conventional white light microscope and achieves a super-resolution, which presents a cost-efficient and universal approach to upgrade the normal microscope to provide up to 10 times better resolution. This imaging capability can bring revolutionaries to many fields related to microscopy. This new design does not require any extra training for the user and the operation procedure is as friendly as the conventional setups in the schools, hospitals, medial labs and micro-fabrication factories. Due to the careful choice of the materials and design strategy, it does not add cost to the exiting setups. Instead, the equipment cost to provide nano-scale resolution can goes down by at least 50%, which makes the nano-vision affordable for the more students, doctors and engineers.

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Review

Additive manufacturing frontier: 3D printing electronics

170004

Bingheng Lu, Hongbo Lan and Hongzhong Liu

Additive manufacturing (AM), also called 3D printing, was firstly introduced into China 30 years ago by professor Bingheng Lu, Academician of Chinese Academy of Engineering. For decades, Prof. Lu and his group have focused on the innovation researching work in micro/nano manufacturing, biological manufacturing, and high speed cutting machine research fields, researched nanoimprint technology firstly in China, and made a great breakthrough in ultraprecision metrological grating technology. In biological manufacturing field, they have developed individualized matching artificial bone and bioactive artificial bone, which has been applied in clinical practice.

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