

Nanoscale Optical Manipulation: Fundamentals, Current Advancements and Future Prospects

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Message from the Guest Editors

Since Arthur Ashkin and his colleagues first demonstrated the concept of optical tweezers in 1986, the field of optical trapping and manipulation has witnessed remarkable development. Optical tweezers employ tightly focused laser beams to capture and manipulate a diverse range of objects, involving atoms, particles, living cells, and viruses. This technology has revolutionized our ability to explore the microscopic world.

In addition to the use of tightly focused laser beams, near-field nanotweezers have received significant interest. They offer the advantages of low-power and stable trapping of nanosized objects. Furthermore, the integration of optofluidics and photothermal control is under rigorous study to design high-throughput and biocompatible tweezing platforms.

This Special Issue, titled ‘Nanoscale Optical Manipulation: Fundamentals, Current Advancements, and Future Prospects’, invites contributions that explore the cutting-edge developments in the realm of optical nanomanipulation. We welcome manuscripts that discuss new fundamental physics, present experimental observations, or highlight unique perspectives on optical manipulation techniques.

