

the forces in the trap are approximately equal. Thus, the infrared trap has the added benefit over visible light traps of inducing less local heating in the focal spot.

What is claimed is:

1. Apparatus for generating a single-beam gradient force optical trap of particles, said apparatus comprising a laser for generating a light beam at a predetermined wavelength and means for focusing said light beam with sufficient convergence to form said optical trap in a predetermined region, said apparatus

characterized in that

said predetermined wavelength is substantially included in the infrared range of wavelengths between 0.8 μm and 1.8 μm inclusively, so that said trap non-destructively confines at least one biological particle.

2. Apparatus as defined in claim 1 wherein said focusing means includes a lens having a numerical aperture greater than 0.9.

3. Apparatus as defined in claim 1 further including means for varying a position of said predetermined region.

4. Apparatus for generating a single-beam gradient force optical trap of particles, said apparatus being comprised of a laser for generating a light beam at a predetermined wavelength and means for focusing said light beam with sufficient convergence to form said optical trap in a predetermined region, said apparatus

characterized in that

said predetermined wavelength is substantially included in the infrared range of wavelengths, so that said trap non-destructively confines at least one biological particle,

said apparatus further including means for generating a second light beam substantially at the predetermined wavelength, said second light beam focused by said focusing means to form a second optical trap in a second predetermined region.

5. Apparatus as defined in claim 4 further including means for independently varying relative positions of the predetermined regions.

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