A tightly focused laser beam so-called Optical Tweezers (OT) are proven unique micromanipulation tools. Nanometer spatial resolution along with megahertz temporal resolution of OT has turned it to a versatile micromanipulation tool. OT have been used to trap dielectric spheres, viruses, bacteria, living cells, organelles, small metal particles, and even strands of DNA. Applications include confinement and organization (e.g. for cell sorting), tracking of movement (e.g. of bacteria), application and measurement of small forces (e.g. in microrheology), application and measurement of small torques (e.g. in a micromixer inside a microfluidic channel), and altering of larger structures (such as cell membranes). Aerosol trapping ability of OT has opened new era in its environmental applications. Though there have been great efforts on improvement of OT for aerosol trapping, however, due to significantly larger spherical aberrations, trapping in air (compared to water) is cumbersome. Here we provide some methods for optimization of trapping of aerosols. We have showed that, how changing the mechanical tube length of the microscope objective and the refractive index of the immersion medium not only would improve the trap strength, but also provides considerably larger trappable particle and trappable depth range for aerosols, by decreasing the total spherical aberration. Furthermore we have designed a new sample chamber that significantly decreases air turbulence inside sample chamber. These optimizations along with our new sample chamber have been abled us to trap 1 μm water droplets and gold, polystyrene and silica nanoparticles, down to 80 nm. They are the smallest aerosols, to the best of our knowledge, which have ever been trapped stably in air using single laser beam.