Nanoscopic volume trapping and transportation using a PANDA ring resonator for drug delivery

Abstract:

A novel design of nanoscopic volume transmitter and receiver for drug delivery system using a PANDA ring resonator is proposed. By controlling some suitable parameters, the optical vortices (gradient optical fields/wells) can be generated and used to form the trapping tools in the same way as the optical tweezers. By using the intense optical vortices generated within the PANDA ring resonator, the nanoscopic volumes (drug) can be trapped and moved (transport) dynamically within the wavelength router or network. In principle, the trapping force is formed by the combination between the gradient field and scattering photons, which is reviewed. The advantage of the proposed system is that a transmitter and receiver can be formed within the same system (device), which is called a transceiver, which is available for nanoscopic volume (drug volume) trapping and transportation (delivery).