**ABSTRACT**

Tight focusing properties of an azimuthally polarized Gaussian beam with a pair of vortices through a dielectric interface is theoretically investigated by vector diffraction theory. For the incident beam with a pair of vortices of opposite topological charges, the vortices move toward each other, annihilate and revive in the vicinity of focal plane, which results in the generation of many novel focal patterns. The usable focal structures generated through the tight focusing of the double-vortex beams may find applications in micro-particle trapping, manipulation, and material processing, etc.