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Surface roughness changes in Al2O3 induced by Nd:YAG laser irradiation

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We investigated the surface roughness and surface morphology changes for the laser irradiated alumina plates by a Q-switched Nd:YAG laser. For the laser irradiation on the alumina plates with λ = 1064 nm, the surface roughness decreases with the increasing energy density. The surface morphology shows that the edges of alumina grains become dull with the increasing energy density. For λ = 532 nm, increasing scan time at the same energy density causes a rough surface. We discuss the physical reason of the surface roughness and surface morphology changes.

Keywords: Surface roughness, Alumina, Nd:YAG laser