

Effect of Chemical Additive on Fixed Abrasive Polishing of LBO Crystal with Non-Water Based Slurry

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Abstract : Non-water based fixed abrasive polishing was adopted to manufacture LBO crystal for nano precision surface quality because of its deliquescent. Ethyl alcohol was selected as the non-water based slurry solvent and ethanediamine, lactic acid, hydrogen peroxide were add in the slurry as a chemical additive, respectively. Effect of different additives with non-water based slurry on material removal rate, surface topography, microscopic appearances and surface roughness were investigated in fixed abrasive polishing of LBO crystal. The results show the best surface quality of LBO crystal with surface roughness Sa 8.2 nm and small damages was obtained by non-water based slurry with lactic acid. Non-water based fixed abrasive polishing can achieve nano precision surface quality of LBO crystal with high material removal.

Keywords : non-water based slurry, LBO crystal, fixed abrasive polishing, surface roughness

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