

Research on Ice Fixed-Abrasive Polishing Mechanism and Technology for High-Definition Display Panel Glass

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Abstract : This study introduces an ice fixed-abrasive polishing (IFAP) technology. Using silica solution IFAP pad and Al₂O₃ IFAP pad, orthogonal tests were performed on polishing high-definition display panel glass, respectively. The results show that the polishing efficiency and effect polished with silica solution IFAP pad are better than those polished with Al₂O₃ IFAP pad. The optimized silica solution IFAP parameters are: polishing pressure 0.1MPa, polishing time 40min, table velocity 80r/min, and the ratio of accelerator and slurry 1:10. Finally, the IFAP mechanism was studied and it suggests by complicated analysis that IFAP is comprehensive effect of mechanical removal and microchemical reaction, combined with fixed abrasive polishing and free abrasive polishing.

Keywords : ice fixed-abrasive polishing, high-definition display panel glass, material removal rate, surface roughness

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