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**Femtosecond micromachining of optical elements** JIN-TAE KIM, Chosun Univ., HUN KOOK CHOI, IK BU SOHN, GIST — and microlens arrary (MLA) fabricated directly using a femtosecond laser have been done. Lithography processing with a femtosecond laser without a phase mask has been applied to fabricate a FZP on silica surface and optical characteristics of the FZP are compared to those of FZP on the silica surface fabricated conventional femtosecond technology using laser ablation processes. Diffraction gratings with higher diffraction efficiency due to $CO_2$ laser surface treatment processing have been fabricated on the surface of silica surface using a femtosecond laser. MLA on silica surface has been fabricated using a femtosecond and $CO_2$ lasers and optical characterizations have been compared with a commercial MLA.

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