Micromachining by ion track lithography

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Micromachining by ion track etching MITE based on the lithographic projection of a mask onto an arbitrary ion track recording material using a parallel beam of highly energetic heavy ions, is described here. By this, deep microstructures have been produced in single crystalline quartz, phlogopite mica, polycarbonate, polyimide, and soda lime glass without any photolithographic masking. Moreover, with a semitransparent mask, depth modulation and negative resist characteristics can be produced. Edge definition and surface smoothness have been found to increase with increasing ion fluence.