

An Improved Method of Preparing Composite PDMS Molds

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Preparing a poly(dimethylsiloxane) (PDMS) mold having a high density pattern with a feature size smaller than 100 nm and an aspect ratio larger than unity has been a challenge yet to be met. Presented is a method that permits preparation of such a PDMS mold. Lowering the viscosity of PDMS prepolymer mixture and enhancing the wettability by introducing a properly chosen solvent to the mixture, coupled with the use of an excessive amount of modulator to delay cross-linking, is the key to successfully preparing the mold. While the method is shown to be effective for dense patterns down to 40 nm feature size with an aspect ratio of 1.5, it might prove to be effective for smaller feature sizes.