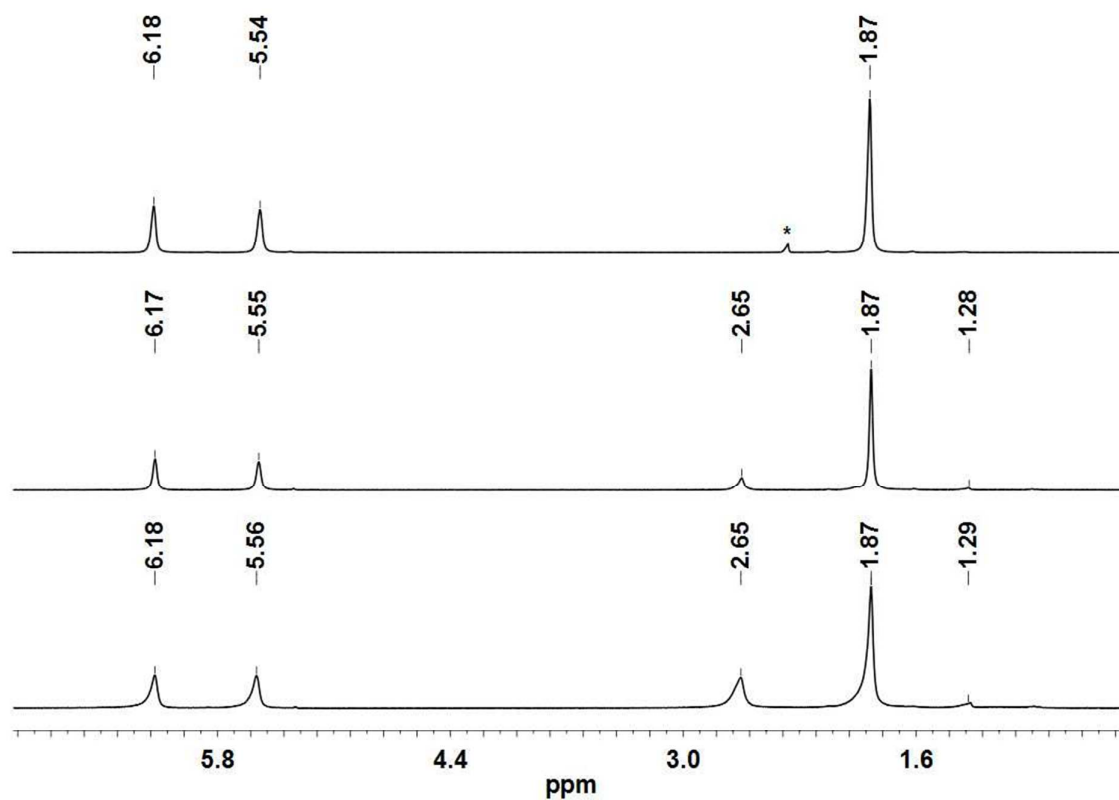


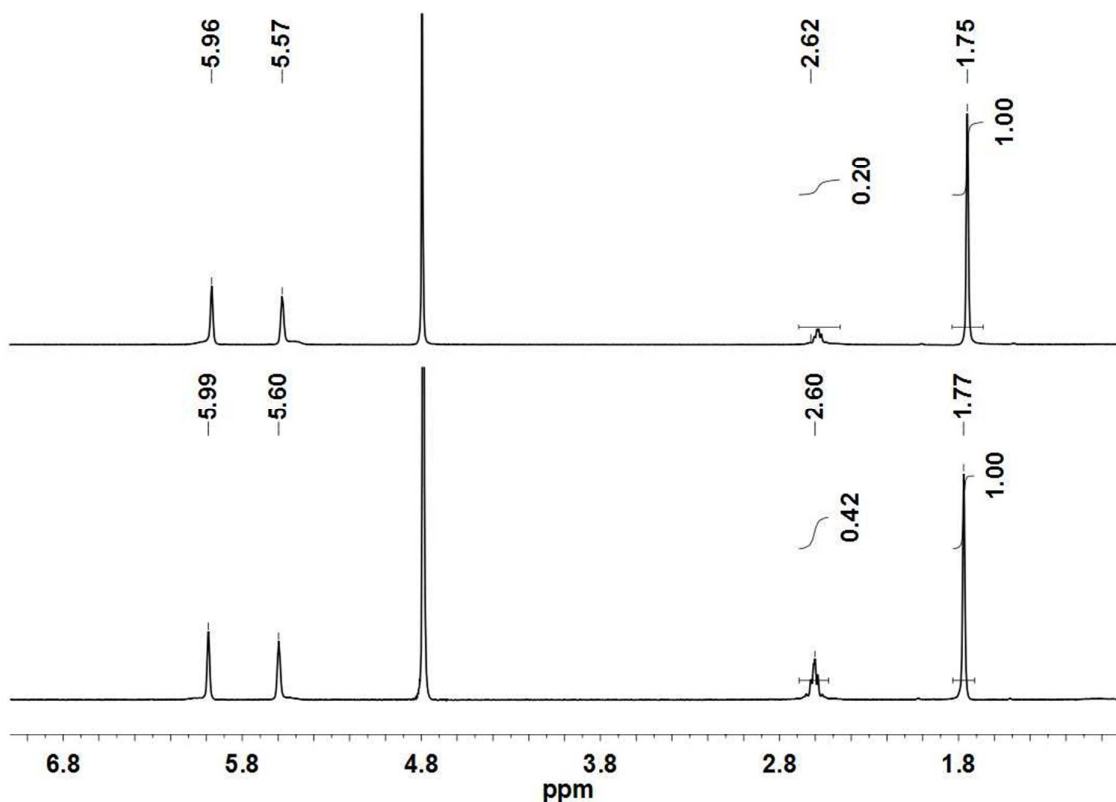
## Supporting Information

### Stimulated Emission Depletion Lithography with Mercapto- Functional Polymers

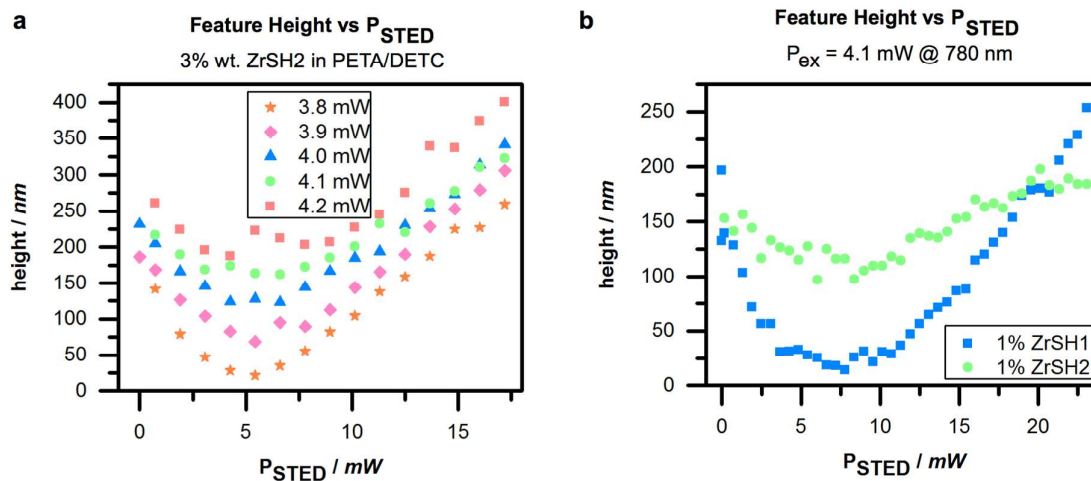
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**Figure S1.** <sup>1</sup>H NMR spectra (250 MHz, 25°C, CD<sub>2</sub>Cl<sub>2</sub>) of **Zr4** (top), **ZrSH1** (middle) and **ZrSH2** (bottom). A residual solvent peak (toluene), which stems from the washing process, is marked with an asterix.



**Figure S2.**  $^1\text{H}$  NMR spectra (250 MHz, 25°C,  $\text{D}_2\text{O}$ ) of the destroyed clusters **ZrSH1** (top) and **ZrSH2** (bottom).



**Figure S3.** Depletion curves used for comparing the photoresists doped with different cluster- and mercapto-group concentrations. For each concentration of doped cluster molecules (1 wt% and 3 wt%) and for each exchanged amount of reactive groups per cluster molecule (**ZrSH1** and **ZrSH2**) several depletion patterns were structured. a) shows depletion curves for structuring with photoresists doped with 3 wt% of clusters. The excitation intensity was varied from 3.8 to 4.2 mW as indicated. b) shows a comparison of 1 wt% of different clusters within PETA and 0.25 wt% DETC. The data indicate that higher thiol concentration increases the residual polymerization due to absorption of the STED beam and hence the depletion is impossible.