Investigation of the bond strength between the photo-sensitive polymer SU-8 and Au - DTU Orbit (31/12/2018)

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We present the results from a thorough investigation of the bond strength between the photo-polymer SU-8 and Au. The data were obtained by pull-test experiments, below the glass transition temperature of the polymer. The different aspects that were investigated were: (i) different adhesion promoters between the SU-8 and Au (ii) the effect of the processing sequence, either keeping SU-8 as bottom layer or Au (iii) varying the UV exposure dosage of the SU-8. For comparison, also the bond strength between SU-8 and other materials was measured. We report on bond strength of 4.8 +/- 1.2 MPa between a 7.5 micrometer layer of SU-8 and Au without any adhesion promoter. This value increases to 11.7 +/- 2.1 MPa for a 30 micrometer layer of SU-8. The value of the bond strength can be increased by up to 75% using an adhesion promoter and fully optimising the processing conditions of the SU-8.

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