Reactive ion etching of polymer materials for an energy harvesting device - DTU Orbit
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Reactive ion etching of polymer materials for an energy harvesting device
In this paper, we have demonstrated deep reactive ion etching (RIE) of two MEMS compatible polymer materials CYTOP and TOPAS, which may be useful for energy harvesting devices. The CYTOP polymer was patterned and used as the electret for the following corona charging while the TOPAS polymer was used as the wafer bonding material. Three mask materials (Al, photoresist and Si) were investigated for the RIE process. Grass effect was observed for both polymers when Al was used as the etching mask. With an optimized RIE recipe, a 1.5μm-thick photoresist layer served well as an etching mask for 11μm-thick CYTOP and a high selectivity of 9 was achieved. The CYTOP polymer was corona charged with target surface potential after patterning. Wafer-level bonding between CYTOP and TOPAS polymers was successfully performed with a low temperature thermo-compression bonding technique.

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