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 利用形態 : 機器利用  
 利用課題名(日本語) : 液中分散非球形粒子の分離用マイクロ流路デバイスの開発  
 Program Title(English) : Separation of non-spherical particles using a microfluidic device  
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### 1. 概要(Summary)

We fabricated molds of negative photoresist SU8 to replicate polydimethylsiloxane (PDMS) micropillar devices using the facilities in Tokyo Institute of Technology. Effect of dose on the fabrication of SU-8 mold was evaluated.

### 2. 実験(Experimental)

#### 【利用した主な装置】

電子ビーム露光データ加工ソフトウェア

マスクレス露光装置

#### 【実験方法】

The data of the designed micropillar device was transformed for reading of maskless exposure system. The diameter of the pillars was set at 10  $\mu\text{m}$ . The size of gaps between the adjacent pillars was set at 6  $\mu\text{m}$  (Fig. 1)

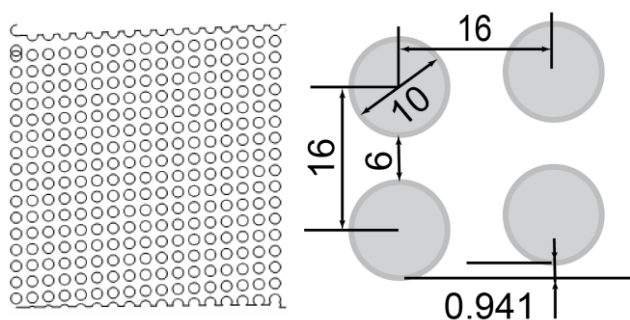


Fig. 1 Schematic illustration of the micropillars.

Next, the negative photoresist SU8-3025 was coated on a silicon wafer and was exposed to UV light. Then, the SU8-3025 was coated on the substrate once again (thickness: 7  $\mu\text{m}$ ) and was processed by the maskless exposure system with

different doses (340 or 350  $\text{mJ}/\text{cm}^2$ ). After exposure, the substrate was baked at 95°C for 5 min and developed for 5 min.

### 3. 結果と考察(Results and Discussion)

The three SU-8 molds were observed using an optical microscope equipped with a camera (Fig. 2). The gap sizes under two different doses were 3.4  $\mu\text{m}$  (340  $\text{mJ}/\text{cm}^2$ , Fig. 2a), 3.6  $\mu\text{m}$  (340  $\text{mJ}/\text{cm}^2$ , Fig. 2b) and 4.7  $\mu\text{m}$  (350  $\text{mJ}/\text{cm}^2$ , Fig. 2c), respectively. As the dose increased, the gap size decreased. Therefore, to fabricate a device with gap size of 6  $\mu\text{m}$ , the optimal dose is expected to be higher than 350  $\text{mJ}/\text{cm}^2$ . This would be examined further in the future.

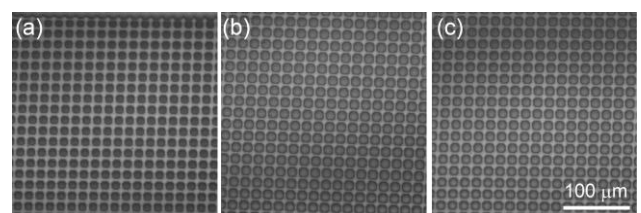


Fig. 2 Three SU8 3025 micro patterns processed with two different doses. (a) 340  $\text{mJ}/\text{cm}^2$ , (b) 340  $\text{mJ}/\text{cm}^2$ , (c) 350  $\text{mJ}/\text{cm}^2$ .

### 4. その他・特記事項(Others)

・技術支援者の河田様, 守田様に感謝致します。

### 5. 論文・学会発表(Publication/Presentation)

なし。

### 6. 関連特許(Patent)

なし。