

エバネッセント光を用いたナノ光造形法の研究

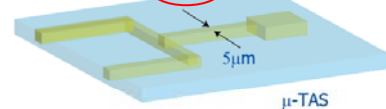
Nano-stereolithography using evanescent light

博士課程 梶原優介

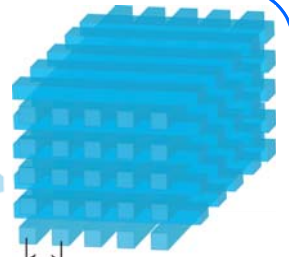
OBJECTIVES

Most desired objects

smallest parts (valve etc)
have resolutions of 100nm



μ-TAS, PhC, NEMS, etc...



Photonic Crystal

光造形

+

エバネッセント光

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ナノ光造形

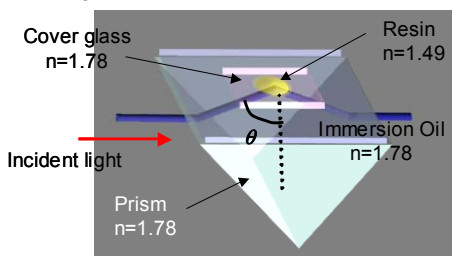
- ・三次元
- ・マイクロメートル
- ・高スループット
- ・光子局在 100nm領域

- ・三次元
- ・サブマイクロメートル
- ・高スループット

三次元, サブマイクロメートル, 高スループット

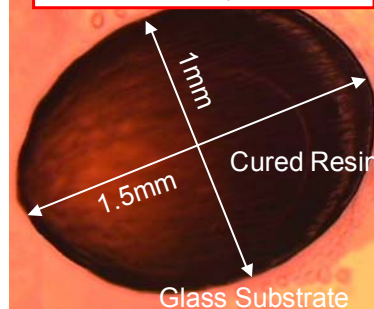
Cured resin by evanescent light

Can evanescent light exposure cure resin?



Experimental setup

Propagating light exposure
Thickness > 100 μm

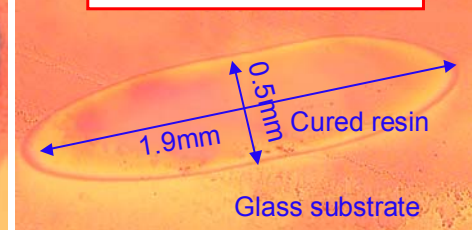


Glass Substrate

Thickness resolution of Sub-μm

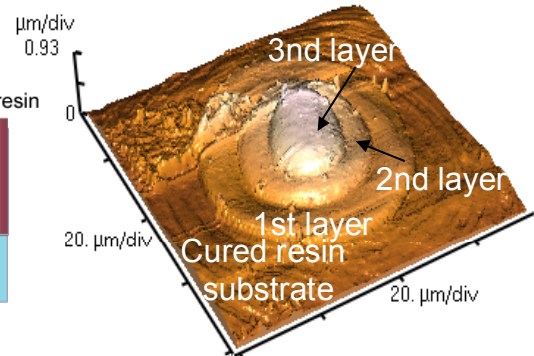
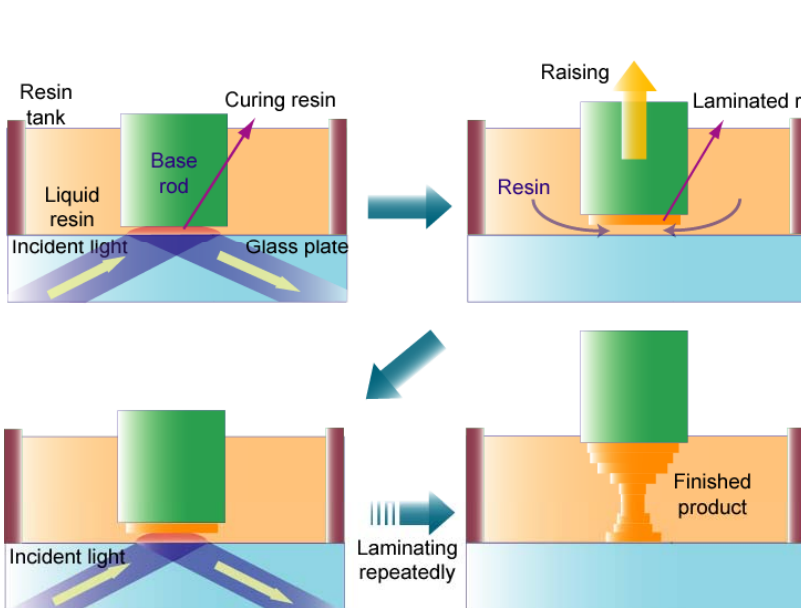


Evanescent light exposure
Thickness = 220 nm



Glass substrate

Development of nano-stereolithography system



Nano-steps (thickness: 500nm)

Nano-steps with the size scale of several 100 nm confirmed the feasibility of nano-stereolithography.