

Stabilities of SLIPS(Slippy Liquid Infused Porous Surfaces) fabricated from ZnO nanowire arrays on various condition

백승현, 한기덕, 용기중†

포항공과대학교

(kyong@postech.ac.kr†)

Recently, SLIPS has been spotlighted for new de-wetted surface. For fabricating SLIPS, ZnO nanowire (NW) arrays were synthesized using a hydrothermal method and surface chemistry modification methods by Teflon spin coating and lubricant impingement. As fabricated SLIPS ZnO NWs shows water contact angle of 115° regardless of NW length. For analysis of stability of SLIPS, the spin coating and underwater experiment are conducted. The stability test by shear stress was conducted by changing RPM of spin rate. The stability of spin condition decreased as the rotation velocity surpass the 4000 rpm. The contact angle and contact angle hysteresis show the decrease of stability. The stability test of underwater SLIPS of ZnO NWs arrays was conducted by changing submerged time. The stability of SLIPS in underwater conditions decreased exponentially as submerged time increased. There are no difference in contact angle after underwater. But, contact angle hysteresis increased after underwater experiment. This study on fabrication and modeling of spin coating and underwater stability of SLIPS ZnO NW arrays will help in designing highly stable SLIPS and broadening fields of SLIPS applications.