

Fabrication of large area super hydro-phobic film by R2R nano imprint system

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Super hydro-phobic film has special characteristics such as deicing, anti-icing, self-cleaning and low surface friction. Due to this reason, researches of making hydro-phobic film have been conducted to utilize the film in a portable appliance area, transfer machine, building exterior and so on. However, current developed hydro-phobic film is limited under A4 size fabricated by coating method. Accordingly, we made hydro-phobic film by applying R2R continuous nano-imprint system in order to produce large area over 1 m² with low price.

First of all, a small size master mold that nano and micro pattern was carved on the Si wafer was developed. Next, flexible large size mold was replicated by step and repeat nano-imprint lithography which area is 270 x 1000 mm². Roll mold for R2R imprint process is fabricated by winding the flexible large size mold. Finally, roll mold was applied to the R2R continuous nano-imprint system. In this procedure, the hydro-phobic film which shows contact angle of more than 150 degrees in 1 m² area could be fabricated.

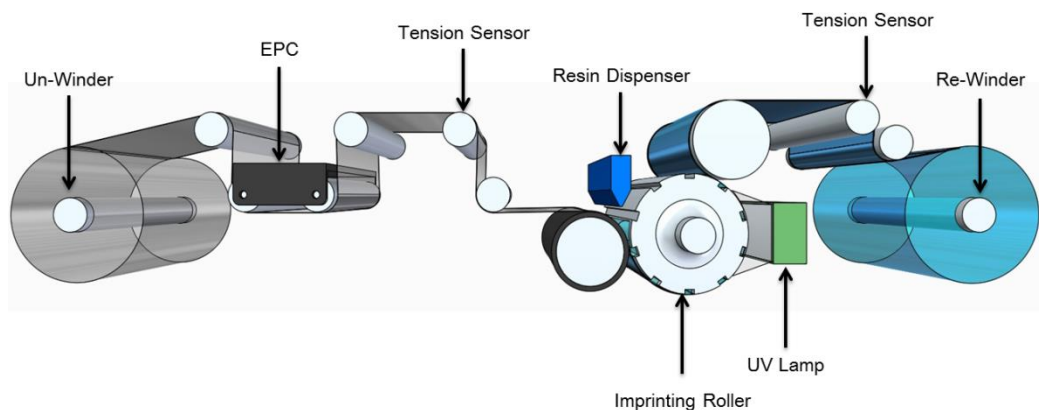


Figure 1: Schematic of R2R continuous nano-imprint system for hydro-phobic film fabrication