Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Plasma Functional Polymerization of Dopamine using Atmospheric Pressure Plasma and a Dopamine Solution Mist

Mu Kyeom Mun[1], Yun Jong Jang [1], Ju Eun Kim [1], Geun Young Yeom[1,2]* and Dong Woo Kim[1]*

[1] School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Kyunggi-do, 16419, South Korea,

[2] SKKU Advanced Institute of Nanotechnology(SAINT), Sungkyunkwan University, Suwon, Kyunggi-do 16419, South Korea

E-mail: gyyeom@skku.edu

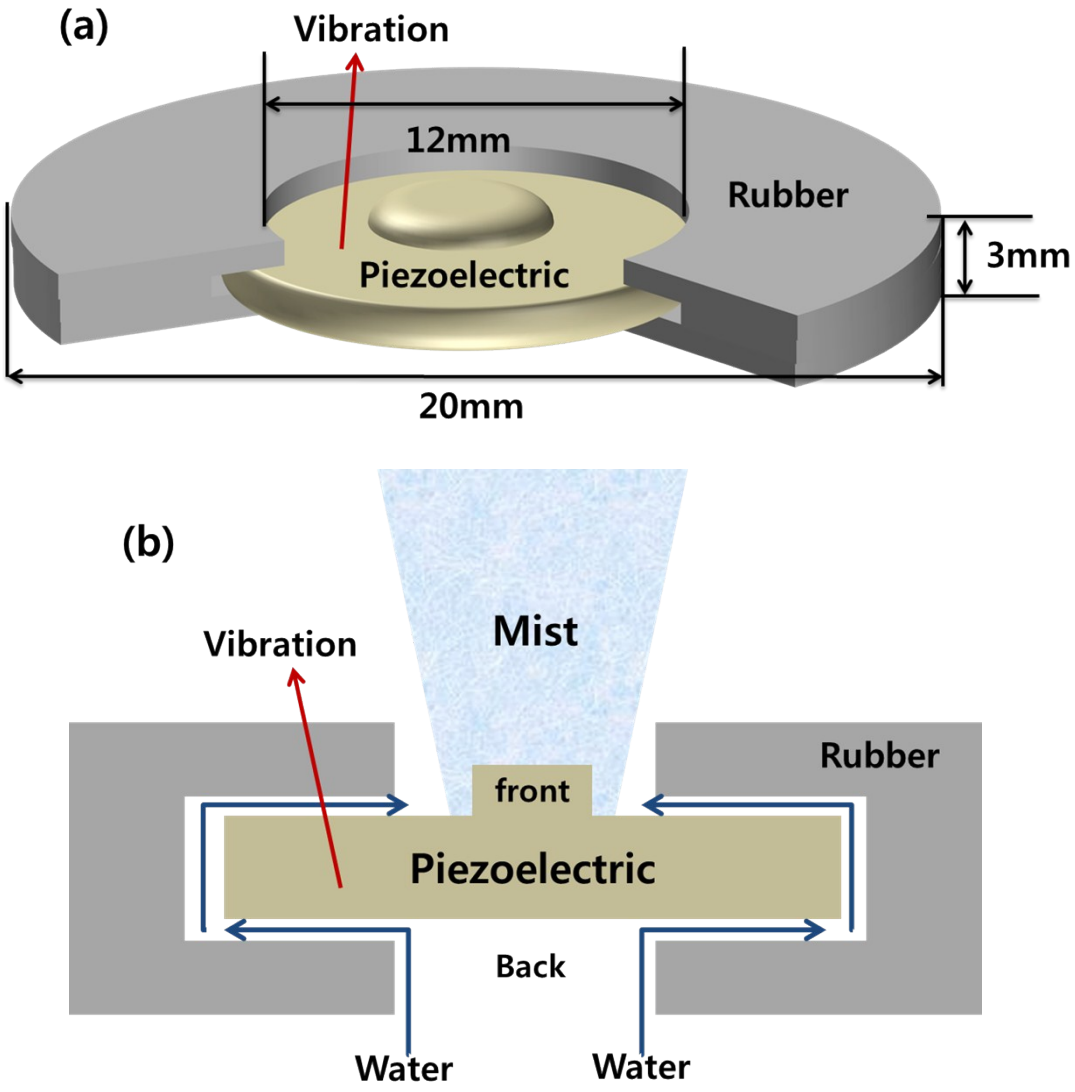

Figure S1 (a) Piezoelectric module isometric view, (b) Piezoelectric module side view

Piezoelectric part was inserted between the rubbers with an empty core shown in Figure S1(a). The module used in this research operates similar to general humidifiers. As the piezoelectric part vibrates, the dopamine solution located at the back moves to the front side during the vibration, changes into mist form by the piezoelectric head, and the mist is sprayed forward. Piezoelectric head vibrated at the frequency of 60~110 kHz. The mist formed by the piezoelectric module was smaller in the mist size and more economical compared to the air spray since the loss of materials was extremely small.

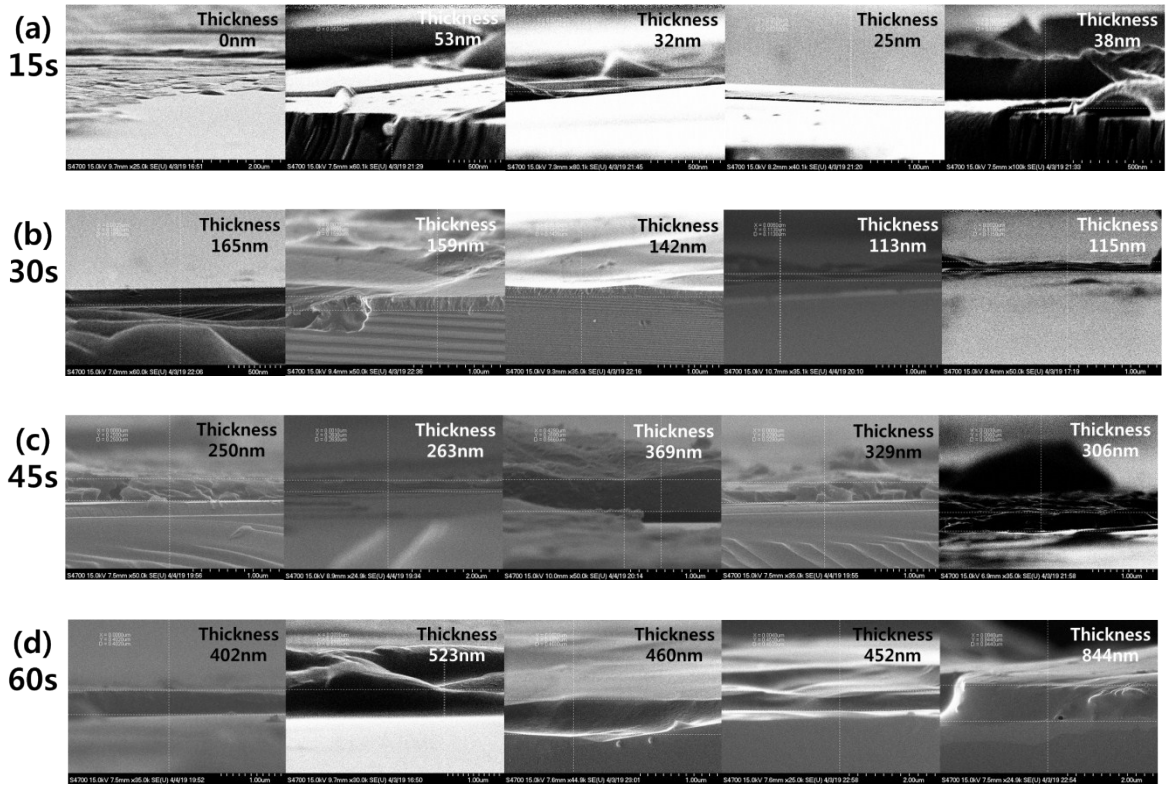

Figure S2 Polydopamine-like films thickness for different deposition time (5 different locations). (a) 15s, (b) 30s, (c) 45s, and (d) 60s.

Figure S2 shows the thickness of polydopamine-like thin films measured using SEM for different deposition time of (a) 15 s, (b) 30 s, (c) 45 s, and (d) 60 s. and for 5 different locations. To measure the polydopamine-like film thickness, the polydoapmine-like film deposited silicon wafer was broken in the liquid nitrogen and the thickness was observed using the cross-sectional field emission SEM.