

Fabrication of Ionic-liquid infused Nanoparticle Multilayer Films as Repellent Surfaces

채민지, 류민, 이효민[†]

포항공과대학교

(hyomin@postech.ac.kr[†])

Liquid-infused surfaces (LISs) have attracted significant attention due to its slipperiness and mobile nature, which leads to remarkable properties including anti-fouling, anti-icing, self-cleaning, and self-healing. While low viscosity and high vapor pressure of conventional lubricants typically result in loss of lubricant and thus failure of LISs over time, ionic liquids (ILs) exhibit high surface tension and extremely low volatility and thus have shown great promise as a candidate for robust and durable LISs. However, the appropriate surface modification strategy for stable infusion of ILs in LISs remain to be resolved. In this work, we fabricate various types of nanostructured surfaces and investigate suitable silane coupling agents for preparation of robust IL infused surfaces. In addition, dual component silanization treatment is performed for elaborate adjustment of affinity between the underlying surface and the IL. We further confirm the oil repellency of IL-infused surfaces for the use as versatile repellent surfaces.