Supporting Information for:

On the Icephobic Performance of Alkyl-Grafted Aluminum Surfaces

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Surface Images of As-Prepared SA- and ODTMS-treated Samples

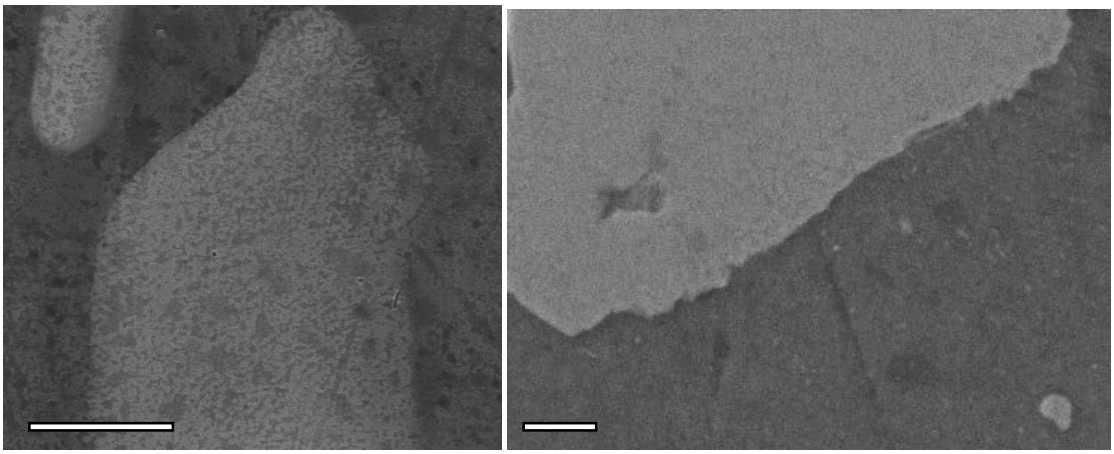

Figure S1. SEM surface images of as-prepared SA-treated (left) and ODTMS-treated (right) AA2024 samples. Bigger irregular (Al-Cu-Fe-Mn) and smaller regular-sized (Al-Cu-Mg) intermetallic particles are seen to have very smooth boundaries with the Al matrix, implying good surface protection by the thin layers and no signs of corrosion. Scale-bars indicate 2 μm.

Surface Images of Iced / Deiced SA- and ODTMS-treated Samples

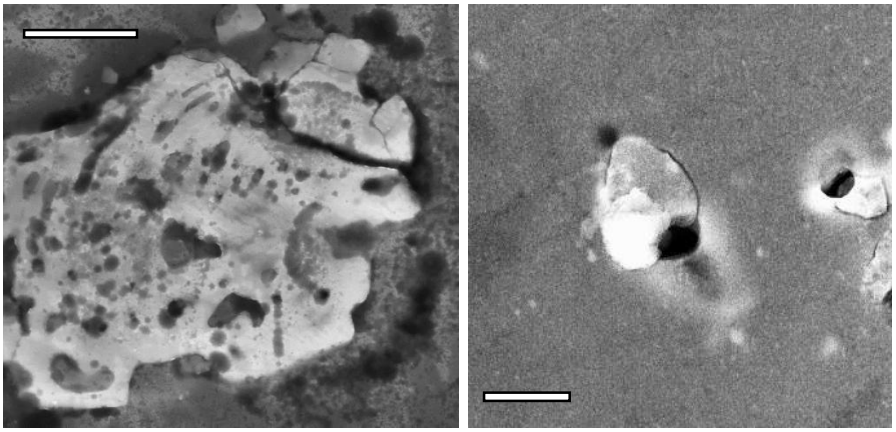

Figure S2. SEM surface images of SA-treated (left) and ODTMS-treated (right) AA2024 samples after 33 icing/de-icing events. Bigger irregular (Al-Cu-Fe-Mn, left) and smaller regular-sized (Al-Cu-Mg, right) intermetallic particles are seen to have signs of corrosion and trenches at the boundaries with the Al matrix. Scale-bars indicate 2 μm.

Surface Images of As-Prepared Two-Layer Coatings

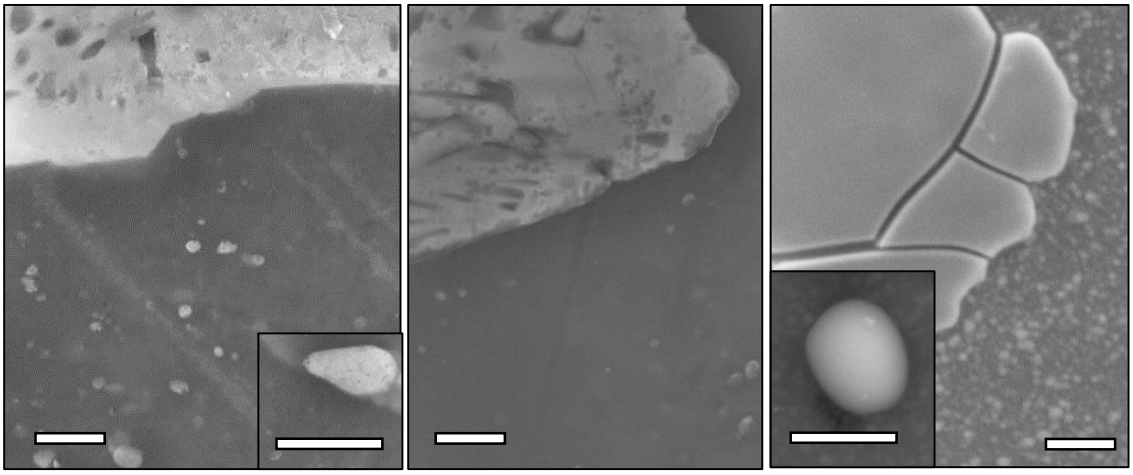

Figure S3. SEM images of as prepared AA2024 surfaces coated with TEOS/FAS (left), BTSE/ FAS (center) and PCC/FAS (right). No signs of corrosion are seen between intermetallic particles and the Al matrix, inserts present Al-Cu-Mg second-phase particles. Scale-bars indicate 1 µm.

Shear Stress of Ice Detachment on Two-Layer Coatings

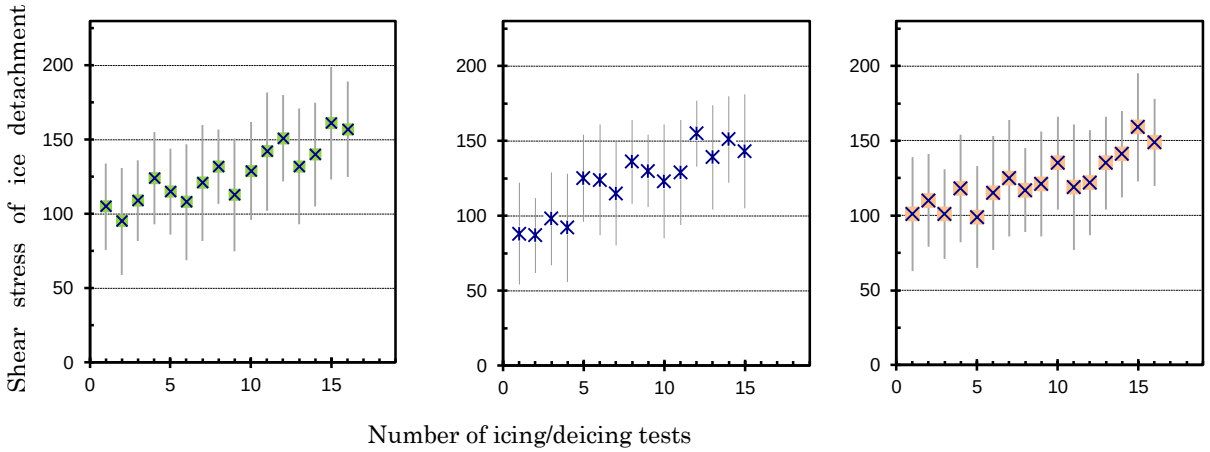

Figure S4. Shear stress of ice detachment as a function of the number of icing/deicing tests on the TEOS/FAS (left), BTSE/FAS (center) and PCC/FAS (right) coatings.

Evolution of Wetting Hysteresis on One-Layer Coatings with the Number of Icing/Deicing Tests

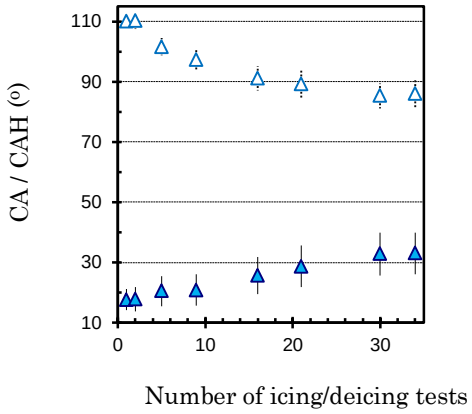

Figure S5. Contact angle (open triangles) and contact angle hysteresis (solid triangles) measured on the surface of ODTMS-coated sample as it was subjected to repeated icing/deicing events.

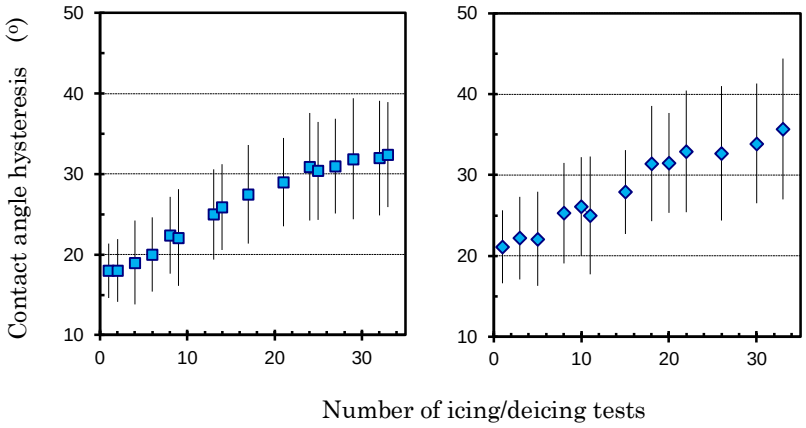

Figure S6. Contact angle hysteresis measured on the surface of FAS (squares) and SA-coated (diamonds) samples as they were subjected to repeated icing/deicing events.

Surface Composition of As-Prepared and Iced/Deiced ODTMS-Treated Samples

Table S1. Measurements of atomic composition (in at. %) by XPS for the AA2024 surface coated with ODTMS before and after 33 icing/deicing treatments. Only major metal elements are presented. The uncertainties were estimated to be about ±0.5%.

Element	As-prepared surface	After 34 icing/deicing cycles
Si	10.5	6.8
Al	87.1	90.9
Mg	2.2	2.0
Mn	0.2	0.3