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Chinn et al.

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(54) **SURFACE COATING**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 78 days. This patent is subject to a terminal disclaimer.

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(58) **Field of Classification Search** 174/255, 174/258; 428/142, 143, 145, 148, 339, 352; 257/635, 642, 789, 791
 See application file for complete search history.

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(57) **ABSTRACT**

A composite is provided, comprising a substrate and a film on the substrate. The film has an RMS surface roughness of 25 nm to 500 nm, a film coverage of 25% to 60%, a surface energy of less than 70 dyne/cm; and a durability of 10 to 5000 microNewtons. Depending on the particular environment in which the film is to be used, a durability of 10 to 500 microNewtons may be preferred. A film thickness 3 to 100 times the RMS surface roughness of the film is preferred.

22 Claims, 17 Drawing Sheets

Durability Improvement

- Nano-particles adhesion improved with silane linker make a more durable film.
- Subsequent – Low Surface Energy coating (ie. FOTS) applied to nano-particle surface to create super-hydrophobic properties.

