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Synthesis of flexible, slippery, and transparent PDMS by spontaneous polymerization for integration of TENG and solar cell

1) Synthesis of PDMS brushes



- Si-Cl group of DMDCS molecules is hydrolyzed to Si-OH;
- Hydrolyzed DMDCS molecules attached spontaneously to the surface via reaction of the Si-OH or Si-Cl group;
- Polycondensation reactions between Si-OH and Si-OH or Si-Cl at the surface will follow, finally forming PDMS brushes.

3) Durability of PDMS brushes



2) Characterization of PDMS brushes



4) Integration of TENG and solar cell



FTIR and XPS confirm the spontaneously polymerization of DMDCS to form PDMS brushes; Extra low SA and CAH endow the slippery property on the PDMS brushes.

> Fabricated a transparent, flexible, selfcleaning, UV

> > resistant and



- A suitable ambient relative humidity is an important parameter for the grafting of ideal PDMS brushes;
- hydrophobic PDMS coating can protect metallic substrates against corrosive media;

low cost TENG. The voltage of the capacitor is near-linearly increasing from 0.61 V to 0.82 V while it is charged continuously by TENG for about 194 s.

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