

## Highly Durable Gecko-like Dry Adhesive with Unidirectionally Stopped Nanohairs

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Gecko-like dry adhesive using high aspect ratio polymeric nanohairs has insuperable limitation, although they have huge potentials in many applications. Repeated harsh contacts on target substrate lead to physical collapse of nanohairs and significant degradation of the adhesion property, because the polymeric nanohairs are quite fragile due to poor mechanical robustness. Herein, we demonstrate highly robust gecko-like dry adhesive with unidirectionally stopped polymeric nanohairs (diameter: 100 nm) with a high aspect ratio (~9) using an ultrathin metal coating. The 100 cycles of repeated adhesion tests with 1 N preloading did not significantly degrade adhesion and collapse of nanohairs. We believe that this approach allows gecko-like dry adhesive to be utilized in many other related applications and diverse industry interest.