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Macroscale adhesion of gecko setae reflects nanoscale differences in subsurface composition

Surface energies are commonly used to predict adhesive forces between materials. Biomaterial specialists based in Germany discovered that the unique gecko operates much like 'the princess and the pea': they feel the subsurface composition of the material. Nanoscale differences in oxide thickness of semiconductors caused macroscale differences in adhesion. Variation in oxide layer thickness caused very subtle differences in the subsurface energy-distance relationship, yet significantly affected the force of adhesion.

Their results published in *Interface* highlight the necessity to characterize further material parameters beyond the surface energy. From this fascinating work they therefore propose a new term, 'subsurface energy', which will be of importance in physics, biology, and engineering.
