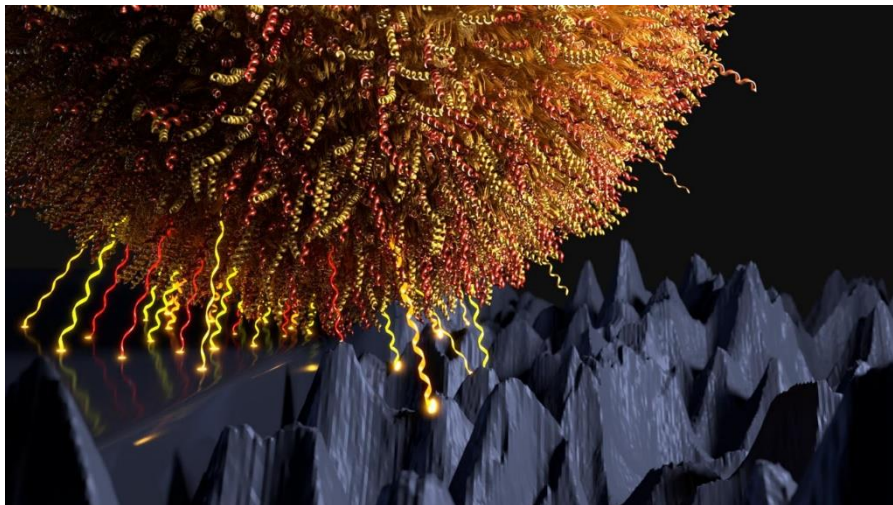


Why do things stick? The physics of adhesion and adsorption in biological systems

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<https://uni-due.zoom-x.de/j/64228670246?pwd=RjVQeFNIUkRKRkpiNVpKYXhJaFNldz09>



"Sticking" is a sloppy description that does not include an explanation why two objects stay together. In biological systems, the terms adhesion, adsorption or "tethering" are used. However, when covalent or ionic bonds are not involved, attractive intermolecular forces are mainly responsible for "sticking". In our experiments, we try to find the main players in the "zoo" of intermolecular forces in order to specifically influence the interactions. Bacterial interactions are a good example: How do bacteria adhere? How can adhesion be reduced or increased? Is a metal door handle better or worse than a plastic one? The main experimental method is "single-cell force spectroscopy", which uses an AFM to record force-distance curves with a single living bacterial cell as the probe. MC simulations help to interpret the curves. The findings have the potential to optimize oral hygiene practices, design bacteria-resistant surfaces and refine implant materials.

