Scientists have unlocked the mystery of how geckos walk on walls and ceilings and have begun to produce synthetic versions of the tiny hairs that allow the little lizards to stick to almost anything.

Each stalk is tipped with tiny caps called spatulae. By conforming to the shape of a surface, the setae get so close to the surface that weak attractive forces between molecules, called the van der Waals force, cause them to stick.

To attach the “gecko glue” to a surface, the nanohairs are pressed against the surface and then dragged against it, causing the nanohairs to conform to variations in the surface shape. The hairs can be detached by pushing and twisting them in the opposite direction.

In low-gravity conditions, such as in space and on some extraterrestrial planets, synthetic gecko hairs might allow legged robots to walk on spacecraft or scale rock walls.

Source: Metin Sitti

James Hilston/Post-Gazette