

Physicists found formula for spiderman suit

Physicists have found the formula for a Spiderman suit. Only recently has man come to understand how spiders and geckos effortlessly scuttle up walls and hang from ceilings but it was doubted that this natural form of adhesion would ever be strong enough to hold the weight of real life Peter Parkers.

Recent research concluded that van der Waals forces – the weak attraction that molecules have for each other when they are brought very close together - are responsible for creepy crawlies’ amazing sticking power. It is the tiny hairs on spiders’ feet that attract to the molecules of surfaces, even glass, and keep them steady.

This discovery however has been taken one step further by research published today in the Institute of Physics’ *Journal of Physics: Condensed Matter* to make sticky human suits.

Professor Nicola Pugno, engineer and physicist at Polytechnic of Turin, Italy, has formulated a hierarchy of adhesive forces that will be strong enough to suspend a person’s full body weight against a wall or on a ceiling, while also being easy to detach.

Carbon nanotube-based technology could be used to develop nano-molecular hooks and loops that would function like microscopic Velcro. This detachable, adhesive force could be used in conjunction with van der Waals forces and capillary adhesion.

Pugno said, “There are many interesting applications for our theory, from space exploration and defense, to designing gloves and shoes for window cleaners of big skyscrapers.”

The theory is all the more significant because, as with spiders’ and geckos’ feet, the hooks and hairs are self-cleaning and water-resistant. This means that they will not wear or get clogged by bad weather or dirty surfaces and will be able to withstand some of the harshest habitats on earth, including the deep sea.

Pugno continued, “With the idea for the adhesion now in place, there are a number of other mechanics that need addressing before the Spiderman suit can become a reality. Size-effects on the adhesion strength require further research. Moreover, man’s muscles, for example, are different to those of a gecko. We would suffer great muscle fatigue if we tried to stick to a wall for many hours.

“However now that we are this step closer, it may not be long before we are seeing people climbing up the Empire State Building with nothing but sticky shoes and gloves to support them.”

Source: Institute of Physics

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