



Wall Climbing Spidey-Style

Nanotech Brings Super Hero Powers to Life!

Imagine climbing walls and swinging from webs between buildings as easily as Spiderman. Sounds like an incredible far-out dream? Not anymore! Sci-Fi super-powers such as these are quickly becoming a reality thanks to nanoscience.



"The Choice to Lead an Ordinary Life is No Longer an Option" Peter Parker



Nanoscience is the study of our world at an extraordinarily small scale (from 1-100 nanometers). To give you an idea of just how small that is, let's compare the earth to a football: if were to shrink the earth down to the size of a football, then that's how much you'd have to shrink a football down to get to the size of a nanoparticle.

(earth:football=football:nanoparticle). Now that's small stuff!

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By examining nature, which already operates on the nano-scale, scientists are learning tons of mind-blowing things; such as how to make materials as light and elastic as silk but as strong as steel! Recently nanoscience has unlocked the mystery of wall climbing geckos. This little lizard

possesses a really cool ability to climb smooth, vertical surfaces and scamper across ceilings with total ease. Scientists have learned that geckos have millions of tiny elastic hairs (setae) covering their toes. These Setae use something called van der Waals forces - the weak attraction that molecules have for each other when they are brought very close together - to enable their awesome "sticky power".

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Based on these insights, a professor in Italy (who obviously had one-too-many comic books growing up) has devised a formula for actually making a Spiderman suit. What is needed to suspend a human from a wall is a superadhesive, releasable, self-cleaning material. Nanotechnology lets us make such a material by combining nano-molecular hooks and loops that function as super-tiny (microscopic) velcro. Spidey's webs, the professor suggests, could be made from around 4 million

super-tiny and invisible nanotubes jammed together. Some scientists believe that a first prototype of such a suit may even be ready within the coming decade. Wow.

There is one huge problem with this formula however. While the gecko is muscularly adapted to hanging for hours on end on walls, human beings have an altogether different body makeup. But no fear, the US military and several groups at MIT working on Soldier Nanotechnologies are working hard to overcome this problem. These scientists are developing a suit of exo-muscles that will enable Wolverine like powers: super-strength, self-healing (emergency medical shots and wound treatment), bullet and explosion proof, waterproof, and temperature-control. The beauty of nanotechnology is that it can introduce all of these cool functions into a single fabric as thin and as lightweight as the spandex pajamas that Peter Parker wears wall climbing. **Pajama party anyone?**



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