

MAR17-2017-020939

Abstract for an Invited Paper
for the MAR17 Meeting of
the American Physical Society

The Physics and Materials Science of Superheroes

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While physicists, engineers and materials scientists dont typically consult comic books when selecting research topics; innovations first introduced in superhero adventures as fiction can sometimes find their way off the comic book page and into reality. As amazing as the Fantastic Fours powers is the fact that their costumes are undamaged when the Human Torch flames on or Mr. Fantastic stretches his elastic body. In shape memory materials, an external force or torque induces a structural change that is reversed upon warming, a feature appreciated by Mr. Fantastic. Spider-Mans wall crawling ability has been ascribed to the same van der Waals attractive force that gecko lizards employ through the millions of microscopic hairs on their toes. Scientists have developed “gecko tape, consisting of arrays of fibers that provide a strong enough attraction to support a modest weight (if this product ever becomes commercially available, I for one will never wait for the elevator again!). All this, and important topics such as: was it “the fall or “the webbing that killed Gwen Stacy, Spider-Mans girlfriend in the classic *Amazing Spider-Man # 121*, and the chemical composition of *Captain Americas shield*, will be discussed. *Superhero comic books often get their science right more often than one would expect!*