

COMIC-TANIUM!

THE SUPER MATERIALS OF THE SUPERHEROES

TM

BROUGHT TO YOU BY:

TIMS
The Minerals, Metals & Materials Society

TIMS
FOUNDATION

TOONSEUM
A MUSEUM WITH CHARACTER!



WHAT IS COMIC-TANIUM?

Comic-tanium™: The Super Materials of the Superheroes is a traveling, educational exhibit that uses the mythologies of well-known comic characters to tell the story of how minerals, metals, and materials professionals change—and save—the world every day. *Comic-tanium* makes these connections by teaming up comic art reproductions, vintage comic books, movie props, and artifacts with related scientific images and stories from the real world. Each section of the exhibit also highlights the exploits of real-life scientists and engineers, complete with their own “super powers” and heroic accomplishments. The mission of *Comic-tanium* is to inspire young people to pursue careers in these professions—and possibly save the world a little bit themselves.

WHAT CHARACTERS ARE FEATURED IN COMIC-TANIUM?

QUITE A FEW, ACTUALLY, ALTHOUGH COMIC-TANIUM'S MAIN THEMES ARE EXPLORED PRIMARILY THROUGH THE STORIES OF THE FOLLOWING CHARACTERS:

WOLVERINE

THE MATERIALS TETRAHEDRON

The story behind Wolverine's adamantium skeleton introduces the Materials Tetrahedron, which is used in real life to illustrate the connections between four main areas that scientists and engineers study in order to create new and better materials. These areas are Processing, Structure, Properties, and Performance.

BATMAN

WHAT LIES BENEATH THE SURFACE

The turning point in many Batman stories occurs in the Batcave, Batman's secret laboratory. The Batcave's computer-aided tools help him analyze clues and understand what might be going on beneath the surface of a mystery. Like Batman, scientists and engineers solve materials problems by unlocking the mysteries of why materials behave the way they do with advanced technology and supercomputing power.

CAPTAIN AMERICA

THE STRONGEST MATERIALS IN THE UNIVERSE

Captain America's weapon of choice is his vibranium alloy shield, capable of absorbing all the kinetic energy and vibrations hurled at it within the bonds between its molecules. This property makes the shield indestructible.

While it is impossible for any material to be indestructible, the quest for super-strong materials is very real, as scientists and engineers create better protection for soldiers, safer cars, and more durable electronics.

MAGNETO

A FORCE TO BE RECKONED WITH

One of the most powerful mutants in the X-Men series, Magneto can control and manipulate electromagnetic fields. Because so many materials demonstrate some level of magnetic properties, he has almost unlimited power over the matter around him. Like Magneto, scientists and engineers harness the magnetic properties of materials for a wide variety of uses, with a particular focus on electronics and energy.

WHY MATERIALS?

Simply put, materials make things work. The cars we drive, the smart phones we use, the generators that we rely on for electricity—and so much more—are part of our world because people have been able to engineer materials in innumerable ways. Like most science and engineering fields, there is a looming shortage of professionals who can research, develop, and manufacture the materials that we need to maintain our standard of living and advance as a society. *Comic-tanium* was created as a relatable, fun, and impactful way to excite interest in the minerals, metals, and materials professions.

IRONMAN

WHAT WE NEED WHEN WE NEED IT

The real source of Iron Man's power is the mind of Tony Stark, a brilliant engineer and wealthy industrialist. Particularly in the *Iron Man* feature films, Tony uses computational tools, 3D visualization, and on-demand manufacturing techniques to tailor his collection of Iron Man suits to specific needs. Scientists and engineers in the real world are beginning to use very similar technologies to design new, advanced materials and then manufacture highly customized components on site.

SPIDERMAN

LEARNING FROM NATURE

Peter Parker may have gained super powers from the bite of a genetically altered spider. But, it's his own scientific talents that created Spider-man's main weapon—synthetic spider webbing that he triggers from his mechanical “web shooters.” Studying the special properties of spider silk and other biomaterials gives scientists important insights into how they can design new materials that are lightweight and damage-tolerant.

EMMA FROST

THE STUFF WE ARE MADE OF

Emma Frost is a mutant in the X-Men universe who can convert her outer skin into a nearly indestructible diamond-like material. Diamond is a form of carbon, a basic element for all organic life on Earth, and one of about 100 naturally occurring elements. Scientists and engineers study the microstructure of these elements to determine how to develop materials that best match the needs of a particular product.

SUE STORM

NO LONGER INVISIBLE

Over the years, Sue Storm, otherwise known as the Invisible Girl, has progressed from a character on the sidelines who required protection to a brilliant scientist and eventual leader of the Fantastic Four. Her journey, in many ways, reflects the progress that has been made in creating a more diverse minerals, metals, and materials workforce.



HOW DID COMIC-TANIUM COME ABOUT?

Comic-tanium was created as a joint effort of The Minerals, Metals, & Materials Society (TMS) and the ToonSeum, with seed money provided by the TMS Foundation. TMS is an international professional society with more than 12,000 individual members representing the entire range of minerals, metals, and materials science and engineering. Developing and producing publications, peer-reviewed journals, technical meetings and workshops, technical roadmapping projects, and special outreach initiatives such as *Comic-tanium* are some of the many ways that TMS helps ensure the strength and progress of these professions. The TMS Foundation is the charitable arm of TMS, with a particular focus on the support and development of the next generation of minerals, metals, and materials scientists and engineers.

The ToonSeum is a non-profit museum of comic and cartoon art. Its mission is to promote a deeper appreciation of cartoonists and their work through hands-on workshops, community outreach, cartoon-oriented educational programming, and exhibitions of original cartoon art.

WANT TO FIND OUT MORE?

- Contact Mike Bazzy, mbazzy@tms.org, about bringing *Comic-tanium* to your community. Mike can also be reached at 800-759-4867, ext. 258 (U.S. and Canada only)
- Contact Maureen Byko, mbyko@tms.org, for media inquiries, interviews, and background. Maureen can also be reached at 800-759-4867, ext. 250 (U.S. and Canada only)
- Visit www.tms.org/comictanium for general information.