EXTREME TEXTILES
DESIGNING FOR HIGH PERFORMANCE

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Media only: Laurie Olivieri 212.849.8420
Jennifer Northrop 212.849.8420
CooperHewittPress@si.edu

Public only: 212.849.8400

Smithsonian's Cooper-Hewitt, National Design Museum Presents "Extreme Textiles: Designing for High Performance"

In spring 2005, Cooper-Hewitt will present "Extreme Textiles: Designing for High Performance," the first museum exhibition devoted to the subject of technical textiles—highly engineered materials designed for ultimate performance in extreme conditions. The exhibition, curated by Matilda McQuaid, Exhibitions Curator and Head of Cooper-Hewitt's Textiles department, will present over 150 extreme textile applications from a wide range of areas, including architecture, apparel, medicine, transportation, aerospace, and the environment. On view April 8, 2005 through Oct. 30, 2005*, the exhibition will examine the broad spectrum of contemporary design through the lens of textile fibers and structures.

"Extreme Textiles: Designing for High Performance" was organized by the Smithsonian Institution's Cooper-Hewitt, National Design Museum. Target is the lead sponsor of the exhibition.

"The goal of this exhibition is to reveal the incredible breadth of areas in which textiles are being used, and to provide inspiration for new approaches to design," says McQuaid. "In addition, the exhibition will share the intrinsic beauty of technical textiles and acknowledge the enormous influence they have in our lives." The objects featured in the exhibition will be organized in terms of their high-performance characteristics—stronger, lighter, faster, smarter, safer—and displayed throughout the museum campus, including the first- and second-floor exhibition galleries, the Great Hall and the Arthur Ross Terrace and Garden.

***Please note new exhibition close date**

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“Extreme Textiles” will explore the recent advancements in technical textiles and reference the museum’s own textile collection in order to illustrate historical examples of textile structures and techniques—such as weaving, knitting, braiding and embroidery—that continue to be used in the most pioneering textiles today.

These age-old techniques, in combination with the tremendous advances in the fields of science and engineering, have contributed to the production of textiles that are more dynamic and versatile than ever before. Developments in polymer technology have resulted in fibers that are stronger than steel, but retain textiles’ traditional advantage of flexibility. These extraordinary new fibers are employed in a number of high-performance situations, ranging from the strongest rope ever fabricated, the Marlow SuperLine, which features a break load of 2,000 tons; woven shipping containers which transport millions of tons of raw materials, pharmaceuticals and food stuffs around the world; and soft polyester slings, capable of lifting 50 tons, that are replacing steel chains for heavy lifting.

The emergence of smart textiles, which incorporate computers and telecommunications technologies, allow for a wealth of new responsive devices, especially in the apparel and home furnishings industries. Examples of smart textiles on display will include touch-on light switches made out of pom-poms, tassels or fur, and an interactive, playful musical rope installation by Squid:Labs that will explore the idea of smart cables or ropes that can track and self-monitor exerted stress/strain loads. The U.S. Army’s Objective Force Warrior Program integrates electronic systems into the basic soldier uniform, enabling the possibility of undergarments which continuously monitor the vital signs of the wearer.

Textile innovations have radically transformed safety apparel for every kind of hazard from needle sticks in law enforcement to molten metal splash for foundry workers. As many of these advances originated with the space program, the exhibition will examine the transfer of technology from the entirely unique, custom space suit to the apparel worn by firefighters and polar explorers. A variety of gloves demonstrating different performance characteristics will be featured, including gloves for handling razor-wire and barbed wire and gloves worn in motorcycle racing and during training for the Apollo IV astronaut mission.

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Textiles also play a major role in the field of medicine, where bio-implantable devices have been used since the 1950s. On view will be current applications of medical textile devices, such as woven and knitted vascular grafts used to replace human arteries in bypass surgery and customized, machine-embroidered implants used by surgeons as “scaffolding” for connecting nerves during reconstructive shoulder surgery. Groundbreaking research and development in the field of nanotechnology—which investigates the creation or enhancement of living tissue—will be explored through electro-spinning, a technique for creating nonwoven fabrics with nanoscale fibers. An electro-spun mask, developed by the U.S. Army’s Natick Soldier Center, will be a startling illustration of current advances in nanotechnology.

Dramatic examples of textiles used in the fields of flight and space travel will be on view, from a recreation of the Wright brothers’ pioneering 1902 glider to spacesuits loaned from the Smithsonian Institution’s National Air and Space Museum. The exhibition will also feature a prototype of the Mars Lander airbag, as well as the next generation “Tumbleweed Rover,” which integrates monitoring/sensing devices into the Mars airbag system.

In the arena of sports, textile-based composites that combine strength and rigidity have made enormous contributions to the speed and high performance of sailboats, racing sculls, skis, skates, surfboards, bicycles and other sporting equipment. Exhibition highlights from this section include the 2003-2004 WilliamsF1 BMW F26 race car, the bicycle wheels of Tour de France cyclist Jan Ullrich, the prosthetic foot worn by paralympic gold medalist Marlon Shirley and a racing dinghy with a radical new type of sail.

These revolutionary innovations and achievements in textile design and engineering have forged partnerships in the fields of science, industry and design. “Extreme Textiles” reveals how technical textiles have already become an integral part of our daily lives and forecasts how textiles will undoubtedly continue to shape our lives.

<u>About Target:</u>

Minneapolis-based Target serves guests at 1,330 stores in 47 states nationwide. Target Stores, along with parent company Target Corporation, gives back more than $2 million a week to its local communities through grants and special programs. Since opening its first store in 1962, Target has partnered with nonprofit organizations, guests and team members to help meet community needs.

About the Museum:

Cooper-Hewitt, National Design Museum, Smithsonian Institution is the only museum in the nation devoted exclusively to historic and contemporary design. The museum presents compelling perspectives on the impact of design on daily life through active educational programs, exhibitions, and publications. Founded in 1897 by Amy, Eleanor, and Sarah Hewitt–granddaughters of industrialist Peter Cooper–as part of The Cooper Union for the Advancement of Science and Art, the museum has been a branch of Smithsonian since 1967.

As the design authority of the United States, Cooper-Hewitt programs and exhibitions demonstrate how design shapes culture and history – past, present and future. The museum presents design along an historic continuum, balancing contemporary with historic concerns, viewing historic periods through 21st century eyes and pinpointing themes of enduring interest to design across all centuries. Holdings encompass one of the most diverse and comprehensive collections of design works in existence, tracing the history of design through more than 250,000 objects spanning 23 centuries, from the Han Dynasty (200 B.C.) to the present day. The Museum’s collections are organized in four curatorial departments, Product Design and Decorative Arts; Drawings, Prints and Graphic Design; Textiles; and Wallcoverings.

The Museum also has an active roster education and public programs, which reflect the range of exhibition programming, from object study programs, to scholarly symposia and programs featuring National Design Awards recipients. Many programs focus on ‘teaching teachers’, to continue to help train professionals for the field. Together, these programs help Cooper-Hewitt engage larger, more diverse audiences, fulfilling the mission of the Hewitt sisters to serve as a catalyst for design education nationally and internationally.

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EXHIBITION FACT SHEET

Curatorial: Matilda McQuaid, exhibitions curator and head of the textiles department.
Susan Brown, curatorial assistant.

Catalog: An accompanying exhibition catalog, "Extreme Textiles: Designing for High Performance," will be published by Princeton Architectural Press in April 2005. The publication will include six essays by specialists in the fields of architecture, design, and textile engineering and feature over 200 photographs.

Sponsor: "Extreme Textiles: Designing for High Performance" is made possible by Target.

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Exhibition Designer: Toshiko Mori of Toshiko Mori Architect.

Public Programs: On Thursday, May 12, 2005 Cooper-Hewitt will host a multi-disciplinary symposium, which addresses the convergence of science, technology and design in textile technology through panel discussions and demonstrations. The 2005 Summer Design Institute and Design Directions programs will also feature workshops and keynote addresses related to the exhibition.

General Information: Cooper-Hewitt, National Design Museum, Smithsonian Institution is the only museum in the nation devoted exclusively to historic and contemporary design. The Museum presents compelling perspectives on the impact of design on daily life through active educational programs, exhibitions, and publications.

Location: The Museum is located at the corner of Fifth Avenue and 91st Street in New York City. Public transit routes include the Lexington Avenue 4, 5, and 6 subways (86th or 96th Street Stations) and Fifth and Madison Avenue buses.

Museum Hours: Tuesdays through Thursdays, 10 a.m. to 5 p.m.; Fridays, 10 a.m. to 9 p.m.; Saturdays, 10 a.m. to 6 p.m.; and Sundays, noon to 6 p.m. The museum is closed on Mondays, Thanksgiving Day, Christmas Day and New Year's Day.

Admission: General admission, $10; senior citizens and students over age 12, $7. Cooper-Hewitt members and children under age 12 are admitted free. For further information, please call 212.849.8400 or visit www.cooperhewitt.org. The Museum is fully accessible.