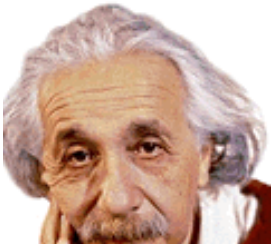

TECH SPACE

NASA Turns To Universities For Research In Space-Age Materials

Chapel Hill - Sep 26, 2002

NASA has selected a consortium of research institutions to develop new generations of materials that could revolutionize civil aviation and space travel. The award will establish an Institute for Biologically Inspired Materials to investigate and design materials that simulate repair mechanisms used by biological organisms to heal wounds.

innovations as simple as flexible piezo electric batteries will have an impact on space exploration platforms such as agile rovers that can scale the canyons of Mars

The institute consists of Princeton University, the University of North Carolina at Chapel Hill, Northwestern University, the University of California at Santa Barbara, and ICASE, a research institute operated at the NASA Langley Research Center in Virginia. In addition to conducting basic research and technology development, the institute will initiate an education and training program in collaboration with the North Carolina Agricultural and Technical State University.

The participants are scheduled to gather for an initial workshop and planning session September 25 on the Princeton University campus.

The institute's mission is to increase fundamental understanding of natural phenomena and translate its findings into new materials that mimic the extraordinary structural and self-repairing properties of biological substances such as bone or sea shells. These biologically inspired materials could adapt to changing conditions and are expected to help make airplanes and spacecraft lighter, stronger and more reliable.

"Our goal is to bring more 'smart' functions into spacecraft

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DRAGON SPACE

Foreign Media Has Eyes For China

Hong Kong (UPI) Mar 10, 2004

Leading Hong Kong entertainment magazine Ming Pao Weekly may soon hit the newsstands in mainland China, with its publisher expected to announce a merger deal with a Chinese media company this week. Overseas media are racing to get into China for a slice of what has been called one of China's last extravagantly profitable areas, the media market.

SPACE SCOPES

Hubble's End Not Quite Foregone

Washington (UPI) Mar 10, 2004

materials," said Ilhan Aksay, a Princeton professor of chemical engineering who leads the institute. "Some of these functions already exist in biology."

NASA, the National Aeronautics and Space Administration, will fund the project with at least $3 million a year for up to 10 years. The researchers also expect to develop partnerships with businesses that will translate laboratory discoveries into readily available products for American industry. NASA selected the consortium's proposal from among more than 100 initial submissions.

The program in bio-inspired materials is part of a broader effort by NASA to expand its relationship with academia by establishing seven university-based institutes, each of which will develop an area of technology of "long-term strategic interest to the agency and the nation."

While two of the NASA institutes will focus on bio-inspired materials, the other five will work in areas such as propulsion or reusable launch vehicles.

Much of the consortium's work will focus on creating innovative composites of organic and inorganic compounds. "Many of the strongest materials in nature derive their unique properties from such combinations," said Dan Morse, a biologist who leads the Santa Barbara team. In bone, for example, fibers of organic collagen provide great strength under tension, while inorganic crystals allow bones to withstand compression.

"We try to understand how biology makes a complex material such as a sea shell, and then, rather than imitating that, we try to extract the fundamental principles we see," said Morse. His group already has discovered interesting mechanical properties in sea sponges that make fiberglass needles and use them to construct intricate structures.

"In making such composites," said Manny Salas of ICASE, "the researchers may be able to coax the raw materials to assemble themselves into microscopic structures and even repair themselves on command." A spacecraft's skin, for example, might be able to send warnings about defects and then repair them and report the results.

"Advanced materials may also be capable of changing their shapes, which would be particularly valuable for airplane wings," said Salas. "Today this is all done with hydraulics. It's a very slow process and a very heavy mechanism. You pay a dear price for carrying all that equipment. If we could find materials that change shape on command we could improve

Several factors are combining to suggest the fate of the Hubble Space Telescope -- which NASA administrator Sean O'Keefe has said will never again be visited by a space shuttle repair mission -- might not be a foregone conclusion.

ROCKET SCIENCE

Phoenix Final Rehearsal Goes Well

Bremen - Mar 10, 2004

With the successfully completed taxi tests of Phoenix, EADS SPACE Transportation achieved another milestone this week: At Lemwerder Airport near Bremen, the prototype of a future space transport system proved its ability to detect and automatically correct track deviations on the ground. The braking system also underwent extensive testing.

SPACE TRAVEL

Space Station Research Yields New Information About Bone Loss

Houston - Mar 10, 2004

A new NASA-funded study revealed how bone loss increases the risk of injuries, highlighting the need for additional measures to ensure the health of spacecraft crews.The study provides new information about bone loss caused by prolonged spaceflight. The study is in the online version of the Journal of Bone and Mineral Research.

TERRADAILY

Smart Catalysts Detects, Traps And Deactivates

airplanes tremendously."

"Beyond their use in aerospace, the new materials could be used in cars, trains, containment structures -- even in tape and other adhesives," said Rod Ruoff, who leads the Northwestern team, which will contribute expertise in fabricating and measuring the mechanical properties of hybrid materials.

Achieving such results will require expertise from many specialties. Each participating institution brings a strong background in different aspects of the project, which spans several disciplines, said Ed Samulski, who leads the team at the University of North Carolina.

"It's a rather ambitious thing to design materials that can not only recognize when they've been damaged but can indicate the exact site and take steps to repair it. In a sense it's at the fringes of science fiction," said Samulski. "These so-called 'self-healing' materials could be critical to space exploration, because a meteor particle even as small as a grain of sand could puncture the hull of existing space vehicles."

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TECH SPACE

Near-Frictionless Carbon Coating Nears Commercial Applications

Argonne - Sep 03, 2002

Four years and more than 3,000 phone calls and e-mail contacts later, Argonne's "Near-Frictionless Carbon" coating stands on the brink of commercialization. A flurry of calls from just about every engineer who works with moving parts followed the announcement in 1997 of a new coating with the lowest coefficient of friction ever measured.

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Airborne Bugs

St Louis - Mar 10, 2004

An environmental engineer at Washington University in St. Louis with his doctoral student has patented a device for trapping and deactivating microbial particles. The work is promising in the war on terrorism for deactivating airborne bioagents and bioweapons such as the smallpox virus, anthrax and ricin, and also in routine indoor air ventilation applications such as in buildings and aircraft cabins.

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