

Next generation solar cells may someday power NASA's robotic explorers

September 20 2004

The success of the Mars Exploration Rovers is a sign of things to come in the realm of space exploration. Robotic technology will play an increasingly important part in NASA's new Exploration Systems Mission Directorate-one of the biggest initiatives since the Apollo Program.

[NASA](#) recently awarded Rochester Institute of Technology and its research partners at the NASA Glenn Research Center and the Ohio Aerospace Institute, Jet Propulsion Laboratory, Pennsylvania State University and the Space Vacuum Epitaxy Center at the University of Houston \$6 million as part of the Human and Robotic Technology program to study nanomaterials and nanostructure for space photovoltaics. RIT will receive \$1.2 million in support of its role in the project.

The four-year project, led by Sheila Bailey of the NASA Glenn Research Center, is focused on the use of nanotechnology and nanomaterials like quantum dots-or granules of semiconductor material-to develop the next generation of space solar cells.

Scientists in RIT's NanoPower Laboratories will use plastic solar cells containing nanomaterials to try to maximize energy conversion and exploit the sun as an available power source.

"Plastic solar cells have been around for a long time," says Ryne Raffaele, director of the lab at RIT. "We're trying to use nanotechnology to improve their efficiency. Quantum dots may be the

key to improving the best crystalline cells available today and to making plastic solar cells better."

More efficient solar cells would upgrade the power supplies used in robotic exploration, improving performance and range.

"The rovers have been remarkably successful," Raffaella says. "They are something that NASA wants to continue, but they need power. To date, these rovers have relied upon solar power and I would expect that trend to continue in the future."

The Exploration Systems Mission Directorate was established in response to President Bush's space exploration policy to send astronauts on a return visit to the moon by 2020 and to realize a manned trip to Mars.

RIT's involvement in the Human and Robotic Technology program is an extension of previous collaborations between the NPRL and the Glenn Research Center that were funded by NASA and the National Science Foundation.

Source: RIT

Citation: Next generation solar cells may someday power NASA's robotic explorers (2004, September 20) retrieved 21 September 2024 from <https://phys.org/news/2004-09-solar-cells-power-nasa-robotic.html>

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