Science & Technology

Solar Heat Made Affordable

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Columbia engineering students and local high schoolers examine solar panels to be installed at Frederick Douglass Academy in Upper Manhattan. (Courtesy of Weidlinger Associates)

Huiming Yin, an assistant professor of engineering, has invented a solar panel that could make sustainable energy affordable for more U.S. households and businesses.

The panel represents the next generation of solar technology, according to Yin, because it is designed to replace some roofing materials. This could reduce overall building costs, compared to installing a freestanding solar array. The system, in addition to generating electricity, produces hot water by circulating the water in

plastic tubes beneath the solar panels.

“The new roof panel is designed for conserving energy, harvesting solar power, and recycling materials, as well as resisting various environmental deteriorations and bearing mechanical loading,” Yin says. “The technology will be applicable to new construction and renovation and to a range of building types, from residential houses to large commercial buildings.”

Yin’s solar panels soon will be installed on the roof of a building at Frederick Douglass Academy in Upper Manhattan. The high school is a partner of the Columbia engineering school’s Center for Technology, Innovation and Community Engagement. Academy students will help Yin and engineers from the local building firm Weidlinger Associates install the 6.4-square-meter rooftop system and then monitor its performance.

“Our goal is to develop innovative products toward zero-net energy buildings,” says Yin, who recently won the National Science Foundation’s CAREER Award, which goes to junior faculty who exemplify the role of teacher-scholars. “Through this project, we will also train our students to be top researchers and to change engineering practices for sustainability.”

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