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Buckyball discovery room named national chemical landmark

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The success of the buckyball at Rice 25 years ago has earned its place of discovery, room 337 in the Space Science Building, renown as a national historic chemical landmark.

The buckyball, a 60-carbon structure in the shape of a soccer ball which was initially observed in outer space, was recreated at Rice in 1985 by Nobel Laureate and late physics professor Richard Smalley and colleagues Professors Robert Curl (Rice University) and Harold Kroto (University of Sussex), who won the 1996 Nobel Prize in chemistry for their work. Buckyballs were named after the famous architect Richard Buckminster Fuller, who helped popularize the geodesic dome to which buckyballs bear a resemblance.

Rice will officially receive the designation on Oct. 11, the 25th anniversary of the discovery, and plans

to install two plaques in the Space Science building: one in room 337, a lab-turned-classroom, and another outside the building.

Every year, the American Chemical Society bestows the national historic chemical landmark award on two chemical discoveries throughout the world.

The American Chemical Society requires that chemical applicants for yearly landmark awards have been distinguished for at least 25 years, have been continuously developing and have great scientific significance, Adams said. The landmark designation is always given to the place where the chemical was discovered or developed.

"This award is extremely important to the chemistry community," Wade Adams, director of Rice's Smalley Institute for Nanoscale Science and Technology, said. "The buckyball was revolutionary, it was contentious; there were a lot of people that thought carbon could not

exist in this form. It was so elegant, simply, it had to be true, but it was such a radical thing."

The buckyball and the nanotube, an elongated version of the buckyball, have potential uses in fields such as medicine, aerospace, architecture, energy, computing and electronics, Adams said.

"The buckyball really helped spearhead the nanotechnology revolution as a field of study," Adams said. "It is kind of a building-block molecule; you can make them act like anything because you can functionalize it so easily. So it had almost magical powers in chemistry."

The buckyball's multiple applications stem from its unique structure. Each carbon is bonded with exactly three other carbon atoms, a structure not found in any other carbon molecules, Adams said.

"It took a while to extrapolate more broadly that at this scale, matter acts differently than it does at a human-sized

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Wade Adams Director of R.E. Smalley Institute

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scale," Adviser to the Dean of Natural Sciences Kathleen Matthews said.

After observing a chemical in stellar dust in space, Kroto came to Houston to work with Smalley to reproduce the substance. The scientists took graphite and bombarded it with a high-energy ion beam until it formed the 60-atom buckyball, Matthews said.

Nanotubes and buckyballs are not only found in space. They can be found in carbon deposits in smoke from fire burning, Adams said. Nanotubes are the strongest material on Earth, he said.

Discoveries that have received this award include penicillin, Kevlar, transparent scotch tape, nylon and the deciphering of the genetic code.