The state-of-the-art facilities in the Class of 1954 Chemistry Research Building have helped to advance Yale’s chemistry program with laboratories incorporating the latest technologies for air handling and chemical safety as well as ample spaces for informal and formal collaboration. The efficiently-designed building is also tangible evidence of Yale’s commitment to environmental stewardship. The University will seek a Leadership in Energy and Environmental Design (LEED) Green Building Rating for the facility—making it the first chemistry building in the country to be certified as such.

Several research projects under way within the building involve environmentally sound chemical processing known as “green chemistry.” Among the areas of focus is the potential development of new environmentally friendly fuel sources to reduce the use of hazardous substances and, simultaneously, promote a cleaner environment.

Victor Batista, associate professor of chemistry, and a team of researchers are pursuing the development of a new generation of semiconductor materials, which can ultimately make use of light as an alternative energy source. He commented, “This would be a valuable contribution to green chemistry based on an exceptionally benign combination of light and water that might provide viable solutions to problems ranging from current energy concerns to reducing atmospheric greenhouse gases.”

The collaboration involves synthesis, spectroscopy, and theoretical chemistry. Other team members include Robert Crabtree, professor of chemistry; Charles Schmuttenmaer, director of graduate studies and professor of chemistry; and Gary Brudvig, professor and chair of chemistry and professor of molecular biophysics and biochemistry. “The long-term objective of our research,” said Brudvig, “is to develop an understanding at the molecular level of the conversion of light energy into chemical energy.”

NSF Funds Pioneering Research in Materials Science

Yale is the primary recipient of a six-year $75 million grant from the National Science Foundation (NSF) to establish a Materials Research Science and Engineering Center (MRSEC). The Yale MRSEC, which is part of a network of centers located at academic institutions throughout the United States, has been named the Center for Research on Interface Structures and Phenomena (CRISP). It is one of only two new MRSEC’s to be launched by the NSF this year. Southern Connecticut State University and Brookhaven National Laboratory will participate in research at the center.

“Our MRSEC research will discover new kinds of electronic, magnetic, and chemical behavior and new ways to control and utilize them,” said Charles Ahn, the Interdisciplinary Research Group leader. Possible applications for the research will include the development of new electronic devices and chemical sensors.

John Tully, the Arthur T. Kemp Professor of Chemistry, Physics, and Applied Physics, and the MRSEC director said that combining the strengths of Yale, scsu, and Brookhaven will “have important consequences in the areas of electronic, magnetic, and chemical behavior as we discover new ways to control materials and apply them to future technologies.”