



The Centrality of Chemistry

The Element of Surprise

Conceptual Design Book

May 2008

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RLR ASSOCIATES INC

1302 North Illinois Street
Indianapolis IN 46202 USA
tel 317 632 1300 fax 317 632 1302





Exhibit Vision The pervasiveness of Chemistry as the central science may be displayed through a series of “Wow!” moments. This exhibit shows the central nature of Chemistry through a series of examples for which the presence or use of Chemistry may be unexpected.

The exhibit provides additional information through the use of a flat screen monitor or internet connection to the Chemistry Department web site.

Objective The objective of this exhibit is to expose University students, primarily undergrads attending class in lecture hall WTHR 200, to the relevance of chemistry as a “central science” through unexpected examples of chemistry that may affect the viewer’s everyday experiences.

Exhibit Narrative

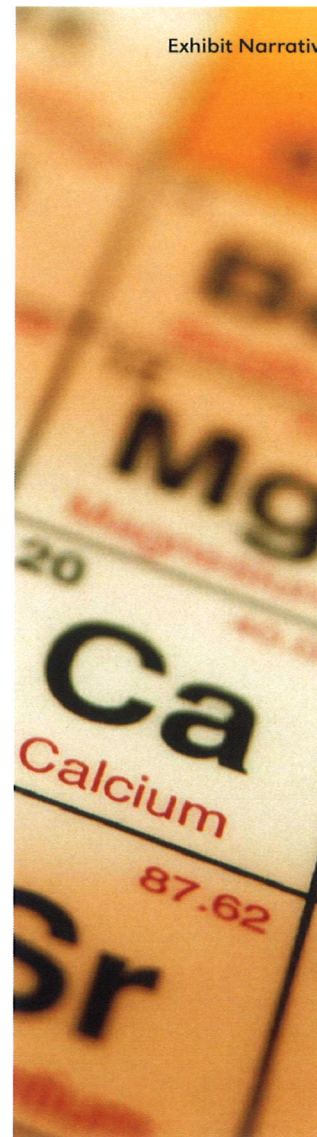
Throughout the day, you are in constant interaction with chemistry. Products created through chemistry are integral to today's life.

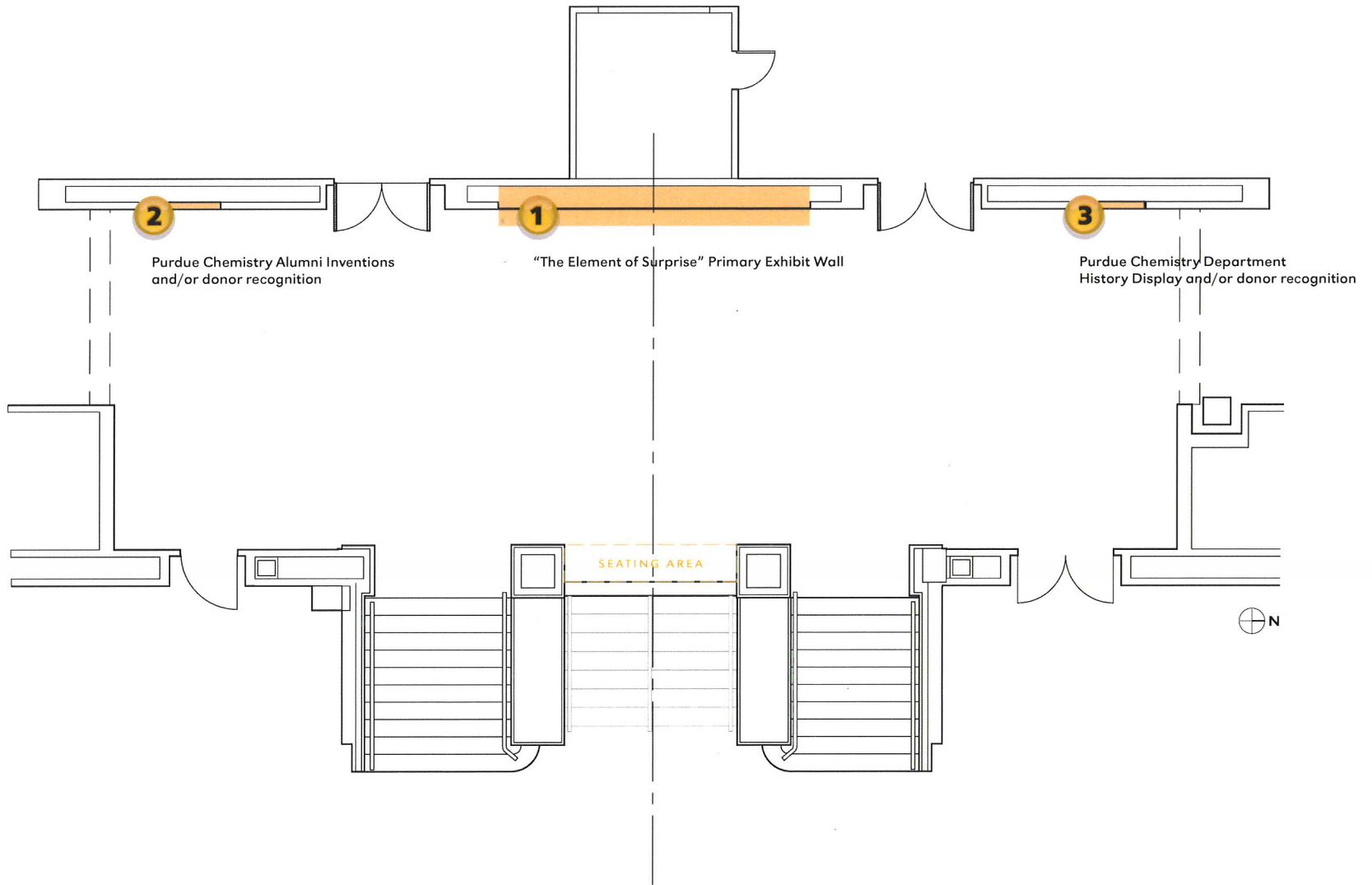
From the beginning of your day, you encounter chemistry: your soap, shampoo, hair spray, toothpaste, and other personal care products all use chemistry for detergents, colors, and fragrances, vitamins and the breakfast to fuel your body, and the fuel used to power your car, the rubber of the tires, the fabric of the seat belt and that used in body armor, and even the roadway itself have been engineered through chemistry. Composite materials used for aircraft, race cars, and even your own vehicle have been developed through chemistry.

Chemistry is at the forefront of green technologies: cleaning the environment, alternative fuels, and energy conservation, such as energy efficient light bulbs.

Chemistry is also the primary weapon against many diseases, including research currently underway at Purdue University using "Trojan Horse" technology, chemotherapy, and treated bed nets used to protect children from Malaria.

Aspects of the history of Purdue Chemistry that may be unknown to the viewer may be included as surprise moments as well. These stories may include the role of Purdue in the Manhattan Project, Mass Spectrometry research, and Analytic Chemistry, and the Nobel Prize for Herbert C. Brown.





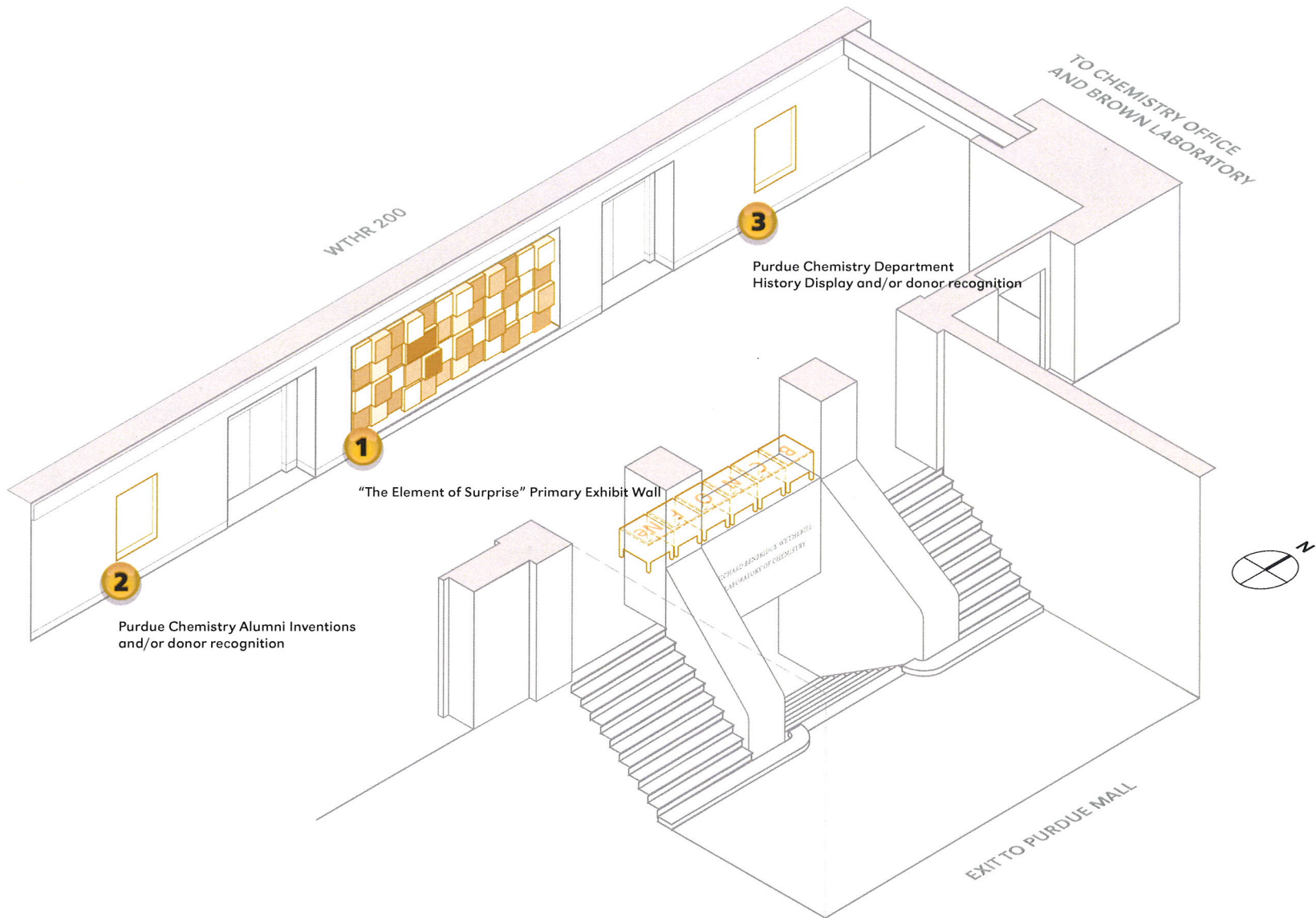


Exhibit Area 1.0 "The Element of Surprise" The concept for the primary exhibit wall is comprised of modular graphic panels. These panels may allow for updates or changes to individual stories without requiring an update to the entire wall.

The panels may also be acrylic shadow boxes or containers for the display of small artifacts.

Topics may be comprised of multiple panels or cases of varying depths.

The exhibit may allow for a flat screen monitor and touch-screen control device for short video presentations on additional stories and/or access to the department web site. The computer or show device may be housed in the WTHR 200 media room directly behind the wall.



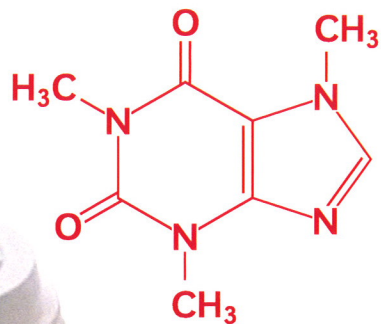


Exhibit Area 1.1 Many chemicals ingested by the body are naturally occurring in foods and drinks we consume everyday.
Caffeine

Many begin their day with a coffee or soda for the stimulant effect of caffeine.

This area may provide a cursory description of how caffeine affects the body, as well as how other chemicals from what we consume affects the body.

Exhibit Area 1.2 Chemistry is widely used in food production. In addition to chemical fertilizers and pesticides which have significantly increased crop yields, but many chemists also work to create natural and artificial flavoring used in many foods, coloring, and packaging created to help keep food fresh longer.
Food Production

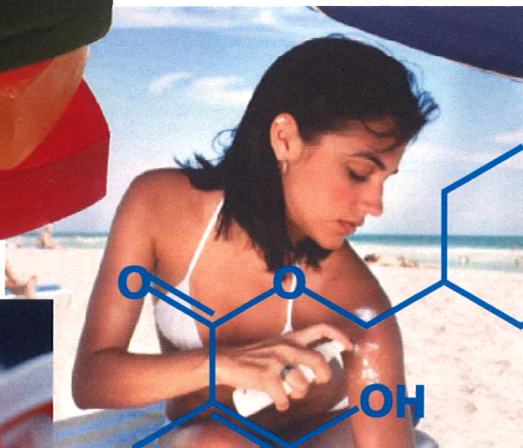
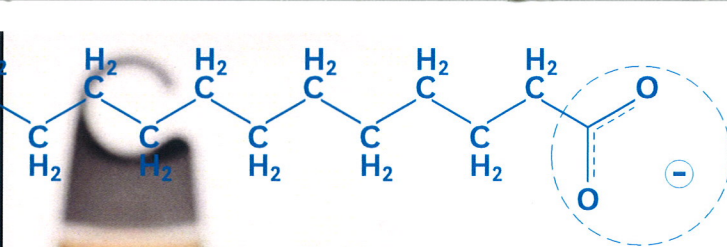
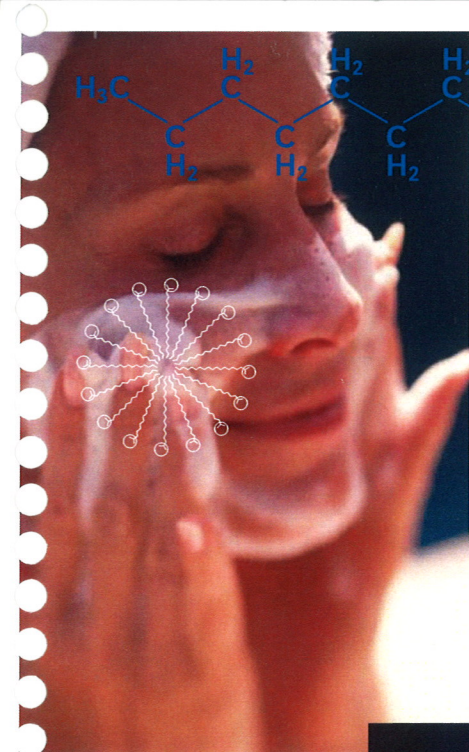


Exhibit Area 1.3
Soap

This area may provide an overview to the chemistry of soaps and detergents.

The exhibit may provide an overview of how soaps work with water to remove dirt and oils, the structure of soaps, and the different types of chemical soaps.

The exhibit may also explain the development of colors and fragrances used in soaps, perfumes, and other personal care products, how they are produced and tested.

Exhibit Area 1.4
Sunscreen

Sunscreen protects the skin from ultraviolet light through a combination of organic and inorganic compounds. Some compounds, including octocrylene, absorb UV light. Other materials act as a physical screen, blocking UV light from reaching the skin.

This area may describe some of the compounds used in sunscreen, and how the compounds protect the skin.

Exhibit Area 1.4
Pharmaceuticals

This area may briefly describe how medicines work in the body by replacing or simulating naturally occurring chemicals that may be lacking, affecting the behavior of cells, or by destroying microorganisms or abnormal cells.

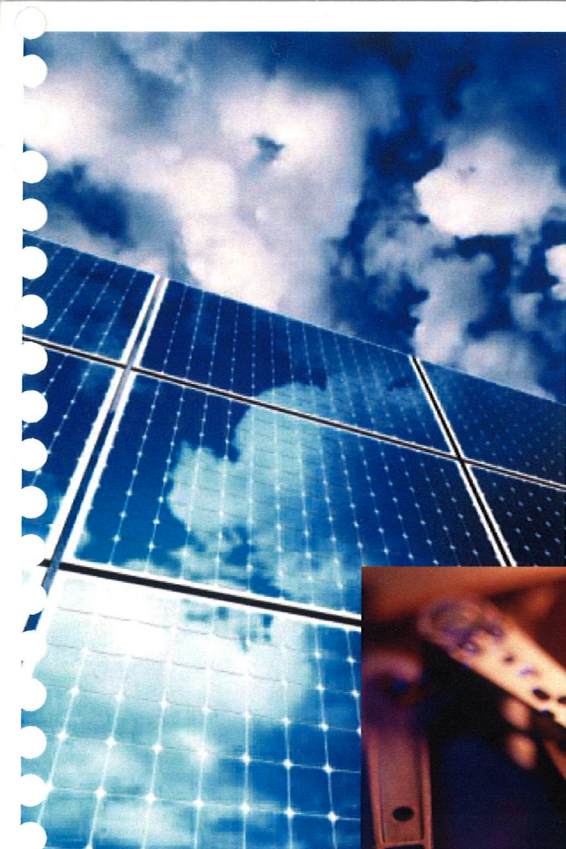


EXHIBIT AREA 1.6 This area may explain how solar panels, specifically photovoltaic cells, use silicon to convert solar energy to an electrical current.
Solar Panels

This area may also introduce topics of “green chemistry,” and ways that chemistry is being used to help lessen pollution into the environment.

EXHIBIT AREA 1.6 This exhibit area may provide a description of advancements in battery technology that allow longer battery life in cell phones, computers, and allow hybrid vehicles to work, the types of batteries, and how batteries work.
Batteries

This area may also provide additional electrical outlets provided to allow students waiting for class to recharge laptop computers or electronic devices.

EXHIBIT AREA 1.7 This area may describe how chemistry, specifically magnetoresistance and the interaction between materials allows magnetizing of binary information on the hard disk drives that viewers may have brought with them.
Magnetic Data Storage

Exhibit Area 1.8 This area may describe how chemistry affects infrastructure, including the streets, bridges, and sidewalks that brought the viewer to Purdue University. The exhibit may focus on asphalt, concrete, and composite materials used in the construction of roadways.
Roadways

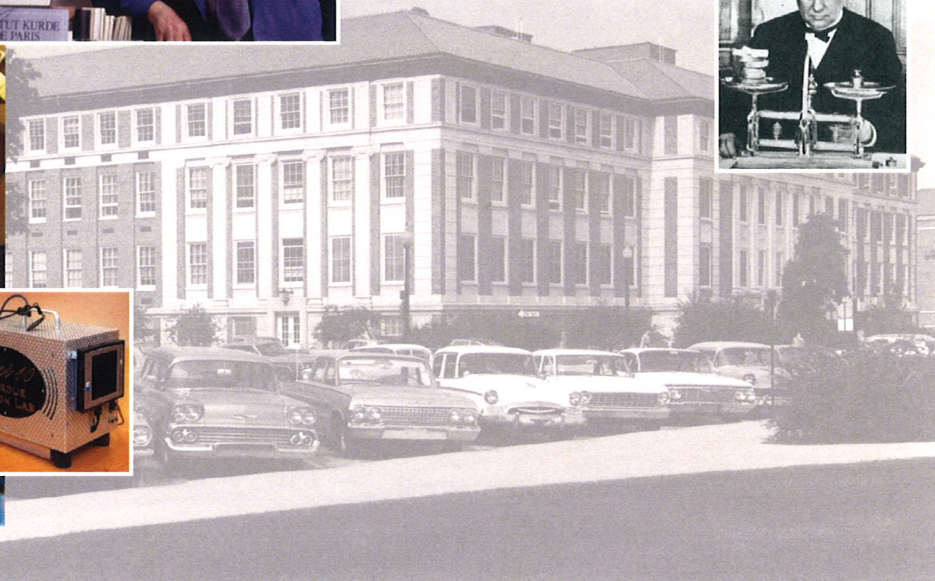
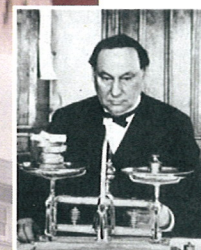
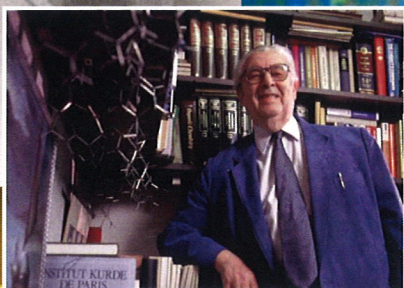
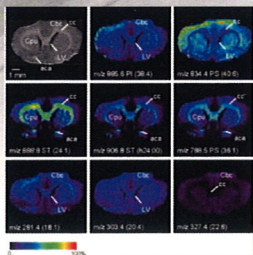
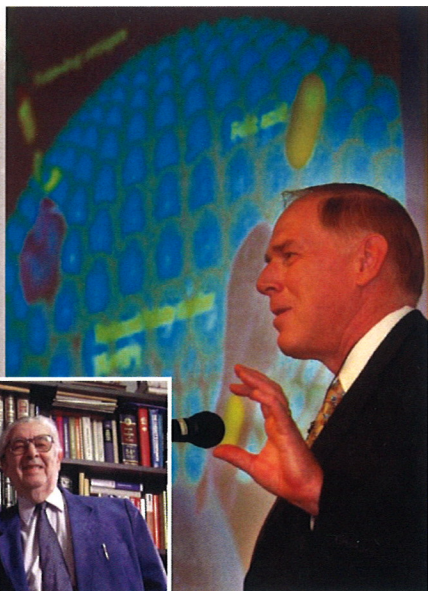
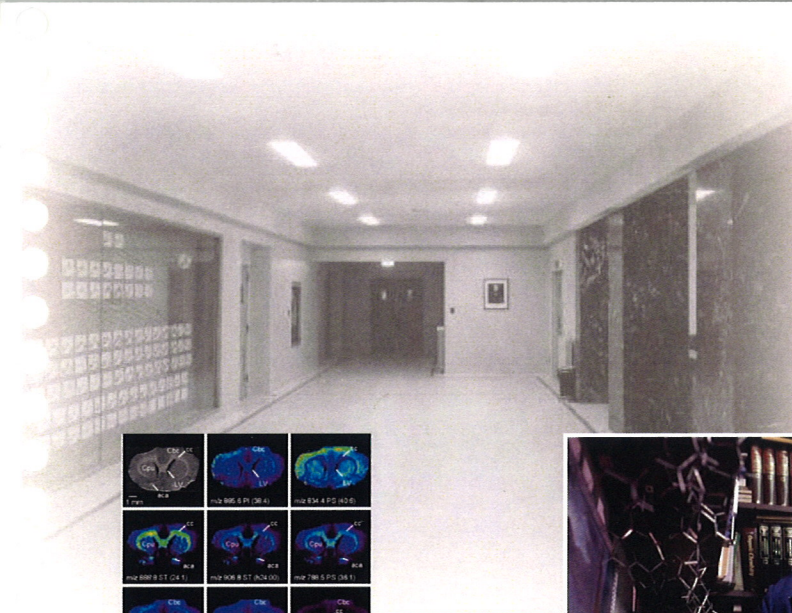


Exhibit Area 2 This area may showcase inventions and discoveries made by alumni of Purdue's Chemistry Department and/or donor recognition.

Exhibit Area 3 This area may include an exhibit for the Purdue Chemistry Department history and/or donor recognition.

Stories may include Harvey W. Wiley, Purdue's participation in the "Manhattan Project," Henry B. Hass, M.G. Mellon, Earl T. McBee, Herbert C. Brown, winner of the 1979 Nobel Prize in chemistry, Purdue's leadership in Analytical Chemistry, work on Mass Spectrometry, including the work of Graham Cooks, and Phillip Low and work with "Trojan Horse" technology to fight cancer.

The exhibit may also include other ongoing research subjects, a history of chemistry facilities at Purdue, and Dr. Richard B. Wetherill, who donated the funds for the construction of a chemistry building.