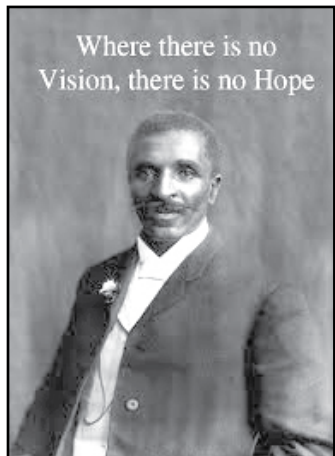


# CHEMISTRY IS



**George Washington Carver** (1864-1943), an American scientist, botanist, educator, and inventor was born into slavery in Diamond, Missouri. Carver developed the crop rotation so that farmers would alternate the soil-depleting cotton crops with soil-enriching crops such as; peanuts, peas, soybeans, sweet potato, and pecans. He wanted poor farmers to grow alternative crops both as a source of their own food and as a source of other products to improve their quality of life;

He created or disseminated about 100 products made from peanuts that were useful for the house and farm, including cosmetics, dyes, paints, plastics, gasoline, and nitroglycerin. Carver invented a process for producing paints and stains from soybeans, in 1927, for which he received three separate patents.

In addition to his work on agricultural extension education for purposes of advocacy of sustainable agriculture and appreciation of plants and nature, Carver's important accomplishments also included improvement of racial relations, mentoring children, poetry, painting, and religion. The most popular of his 44 practical bulletins for farmers contained 105 food recipes that used peanuts. He served as an example of the importance of hard work, a positive attitude, and a good education.

George Washington Carver's humility, humanitarianism, good nature, frugality, and rejection of economic materialism also have been admired widely. One of his most important roles was in undermining, through the fame of his achievements and many talents, the widespread stereotype of the time that the black race was intellectually inferior to the white race. In 1941, Time magazine dubbed him a "Black Leonardo", a reference to the Renaissance Italian polymath Leonardo da Vinci.

**Alexander Porfirievich Borodin** (1833-1887) was born in Saint Petersburg, the illegitimate son of a Georgian and a 24-year-old Russian woman. He was educated as a medical doctor at the Medico-Surgical Academy. He studied abroad and worked in the laboratory of Emil Erlenmeyer; through this research program he was credited with making the seminal contribution on the discovery of the Aldol reaction (which was also discovered independently by Wurtz).

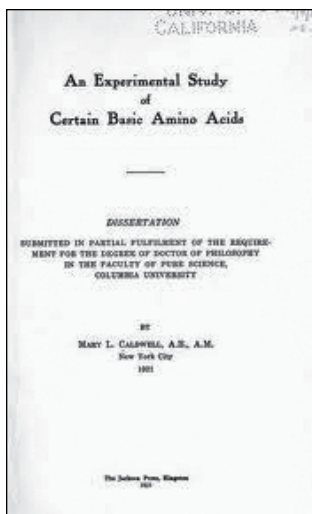
His and his wife, Ekaterina, advocated for women's rights and they were of the opinion that there should be equality of education. In 1862 Borodin became a professor of chemistry at the Academy of Medicine. Convinced that women would make good doctors he founded and ran the St.Petersburg Medical School for Women. This was the project of which he was most proud. On his burial casket there is a silver plate from his female students, which reads: "To the Founder, Protector and Defender of the School of Medicine for Women."

While known for chemistry, Borodin is even better known for his work as a composer. Many of his songs were unfinished and completed by other writers as he had to work to provide for a sickly wife, and poor relatives. Franz Liszt was one of the first to recognize and like Borodin's musical talent. He is best known for his symphonies, his two string quartets, and his opera Prince Igor. Music from Prince Igor and his string quartets was later adapted for the US musical Kismet.



# ARTISTIC

# CHEMISTRY IS



**Mary Letitia Caldwell** (1890-1972) was born in Bogota, Colombia triumphed despite of traditional limitations set by society, she over-came gender bias and progressive muscular disability to help pave the way for minority women in Science careers. After obtaining both M.A. and Ph.D. degrees in chemistry from Columbia University, Mary Caldwell secured a position as a senior faculty member in the chemistry department of Columbia University in 1921 and attained the rank of full professor in 1948. She was the only female senior faculty member in the chemistry department at the time.

Mary Caldwell's research centered on enzymes that use starch as a substrate, particularly amylases; she was the first person to purify porcine pancreatic amylase, an enzyme that is used both in industry and research. She also established that amylase is a protein. She ran a productive biochemistry research programme while teaching a full load of courses. Although Mary Caldwell suffered from a progressive muscular disorder, her office and research lab remained on the 9th floor of Chandler Hall. An interesting aspect of Caldwell was recalled by one of her former students:

“ . . . Dr. Caldwell inspired her students with respect for technical excellence as well as fine scholarship. Her manners were rather formal; she rarely addressed her students by first names and scrupulously changed the “Miss” or “Mr.” to “Dr.” immediately following a successful thesis defense. Despite her formal manner, she conveyed a sense of concern for a student's personal welfare. She could summon a bright word of encouragement when the work was not progressing fast enough; often ending her comments with a philosophical “Well, child, that's research!”

**Dr. Jai Nagarkatti** (1947-2010) was born and raised in Hyderabad, India, where he taught chemistry. He traveled to the United States in 1970 for graduate studies. He earned his Ph.D. in Organic Chemistry at Texas A&M University-Commerce (1976, then East Texas State) and completed the Advanced Management Program at Harvard Business School in 2004.

He began his career as a bench chemist at Aldrich Chemical Co. in Milwaukee, Wis.—the same firm through which he had ordered chemicals as a student. In 2004, he was named President and Chief Operating Officer, and two years later was promoted to President and Chief Executive Officer (CEO). In 2009, he was elected Chairman of the Sigma-Aldrich Board of Directors.

Dr. Nagarkatti was a gracious, thoughtful and visionary leader. He will be remembered fondly for his sense of humor, humility, drive, high personal standards and expectations and, most importantly, his concern and empathy for his colleagues and the people in the communities Sigma-Aldrich serves.

He served on the Board of Trustees at Washington University in St. Louis and the Missouri Botanical Garden. He also was a member of the board of the St. Louis Science Center. Outside of work, he enjoyed spending time with his family, travel, good food and movies.

Jai and Susan Nagarkatti met and fell in love at Texas A&M University-Commerce (then East Texas State). Their love of education and TAMU-C led them to generously create the Jai and Susan Nagarkatti Chemistry Fellowships at Texas A&M University-Commerce. In a 2008 interview with the St. Louis Commerce Magazine, he described the secret of his success: “Do the right thing and good things will happen to you.”



# NOBLE



# CHEMISTRY IS



**Dr. Mae Carol Jemison** is Beautiful and Brilliant as she walks the runway at the Red Dress Heart Truth fashion show during Fashion Week 2007. She is a Physician, a Scientist, an Engineer, an Explorer, a Futurist and the first woman of colour in space. This amazing woman proves that daring makes a difference!

Dr. Jemison received a B.S. in chemical engineering and a B.A. in African and Afro-American Studies from Stanford University in 1977. Mae Jemison was very involved in extracurricular activities including dance and theater productions, and served as head of the Black Student Union. Upon graduation, she entered Cornell University Medical College to work toward a medical degree. She expanded

her horizons by visiting and studying in Cuba and Kenya and working at a Cambodian refugee camp in Thailand. Dr. Jemison speaks Japanese, Russian and Swahili.

Dr. Jemison received her M.D. in 1981, and worked as a general practitioner. After graduating from medical school, she joined the Peace Corps, serving as the area medical officer in the West African countries of Sierra Leone and Liberia for two and a half years, she also taught and did medical research. When Dr. Jemison returned to the U.S. in 1985, she made a career change and decided to follow a dream she had nurtured for a long time. She applied for admission to NASA's astronaut training program. The Challenger disaster of January 1986 delayed the selection process, but when she reapplied a year later, and Dr. Jemison was one of the fifteen candidates chosen from a field of about two thousand.

On June 4, 1987, she became the first African American woman ever admitted into the astronaut training program; she became the science-mission specialist, a job which would make her responsible for conducting crew-related scientific experiments on the space shuttle. On September 12, 1992, Dr. Jemison finally flew into space with six

other astronauts.

After serving in NASA from 1987 to 1993, Jemison founded The Jemison Group, Inc., which developed ALAFIYA, a satellite-based telecommunications systems intended to improve health care delivery in developing nations. She also was a professor in the Environmental Studies Program at Dartmouth College, where she directed the Jemison Institute for Advancing Technology in Developing Countries.

Dr. Jemison has received several honorary doctorates, the 1988 Essence Science and Technology Award, the Ebony Black Achievement Award, a Montgomery Fellowship from Dartmouth College in, and was named Gamma Sigma Gamma Woman of the Year in 1990. In 1992, an alternative public school in Detroit, Michigan - the Mae C. Jemison Academy, - was named after her. Jemison is a member of the American Medical Association, the American Chemical Society, the American Association for the Advancement of Science, and served on the Board of Directors of the World Sickle Cell Foundation from 1990 to 1992. She is also an advisory committee member of the American Express Geography Competition and an honorary board member of the Center for the Prevention of Childhood Malnutrition. After leaving the astronaut corps, she accepted a teaching fellowship at Dartmouth and also established the Jemison Group, a company that seeks to research, develop, and market advanced technologies.

Dr. Mae Jemison is the host and a technical consultant to "World of Wonders" series produced by GRB Entertainment and seen weekly on the Discovery Channel. Dr. Jemison feels that one of the greatest honours she has received over the years is the establishment (1992) of the MAE C. JEMISON ACADEMY, an alternative public school in Detroit. Following her historic flight, Dr. Jemison noted that society should recognize how much both women and members of other minority groups can contribute if given the opportunity.



# BEAUTIFUL