



# Ahmed Zewail

Chemist

## From a Short Flash: Ahmed Zewail's Effort to Spread Light

Ahmed Zewail has not let his Nobel Prize go to waste. Zewail gained prominence in physics and chemistry as the man who used lasers — flashing at unimaginably small intervals, called femtoseconds — to catch the movement of atoms as they form and break chemical bonds. And he gained wider fame in 1999 as the first Arab to win a Nobel Prize in the sciences.

Zewail grew up in Disuq, Egypt, enchanted with science, math, literature and music. He graduated from Alexandria University and received a master's degree there, but mentors urged him to study abroad for his doctoral degree, and he won a scholarship at a U.S.

Ahmed Zewail, left, receives the 1999 Nobel Prize in chemistry from Swedish King Carl XVI Gustaf, right, in Stockholm, Sweden, for his work on rapid laser technique to track atoms during chemical reactions. Photos © AP Images



university. Once there, he wrote, "I was learning new things literally every day — in chemistry, in physics and in other fields."

He has said that he gave up his plan to return to Egypt as a university professor because he would not have had the resources to pursue the sort of high-level research he began in the United States. Since 1976, he has made his professional home at the California Institute of Technology (Caltech).

His award-winning work involved using laser flashes at intervals of a few femtoseconds. (A quadrillion femtoseconds equals one second. A quadrillion seconds equals nearly 32 million years.) In much the way a strobe light catches the movement of people on a dance floor, the laser catches the movement of atoms in reactions, including the transitional states that form briefly before the reactions are complete.

Zewail continues his work at Caltech, but he also has used his prominence to promote the importance of science education. As a recipient of Egypt's highest honor, the Order of the Nile (Kiladat El Nil), he has challenged his native country to improve its governance and education and



reclaim its ancient role as a world leader in science.

He is a member of the U.S. President's Council of Advisors on Science and Technology and a presidential science envoy, as well as a member of Egypt's Supreme Council for Science and Technology.

During and after the popular uprising that forced Hosni Mubarak to resign as president, Zewail served as a moderator and conciliator. He has called for reform in Egypt's education system — so that the country can give students opportunities such as those he left the country to pursue.

# Prominent Arab Americans Featured in This Series



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Ahmed



Akkad



DeBakey



El-Baz



Gaida



Gibran



Haiek



Hayek



Kasem



Khaled



Khannouchi



Masry



McAuliffe



Shihab Nye



Rihani



Said



Salama



Shamieh



Zerhouni



Zewail



Tlaib

**Rashid Abdu**, Physician

**Ahmed Ahmed**, Comedian

**Moustapha Akkad**, Film Director

**Michael DeBakey**, Heart Surgeon

**Farouk El-Baz**, Geologist

**Gaida**, Singer

**Kahlil Gibran**, Artist and Poet

**Joseph Haiek**, Publisher

**Salma Hayek**, Actress

**Casey Kasem**, Radio Broadcaster

**DJ Khaled**, Rap Music Artist

**Khalid Khannouchi**, Marathon Runner

**Ferial Masry**, Community Activist

**Christa McAuliffe**, Teacher in Space

**Naomi Shihab Nye**, Author

**Ameen Rihani**, Poet

**Edward Said**, Author and Activist

**Kareem Salama**, Singer

**Betty Shamieh**, Playwright

**Rashida Tlaib**, Politician

**Elias Zerhouni**, Medical Vanguard

**Ahmed Zewail**, Chemist