

Research

HIGHLIGHTS

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Dr. Ahmed Zewail — 1999 Nobel Prize for Chemistry

AFOSR Plays a Role in Nobel Prize Winner's Work

A researcher at the California Institute of Technology, supported by the Air Force Office of Scientific Research won the 1999 Nobel Prize in chemistry. In 1986, AFOSR support established the initial femtosecond research and facilities, which were

used to perform the Nobel Prize winning work. AFOSR support for this pioneering research continues today.

Air Force applications focus on understanding and controlling the release of energy in chemical reactions in systems such as novel rocket propellants, chemical lasers,

and the interactions of aerospace vehicles with their environments.

Dr. Ahmed Zewail, the Linus Pauling Professor of Chemical Physics and professor of physics at the California Institute of Technology, joins an impressive list of Nobel Prize winners who received AFOSR support for their research long before receiving their Prize. The list, which now contains 36 names, includes Nobel Prize winners in chemistry, physics and medicine.

The announcement was made Oct. 12, 1999 by the Royal Swedish Academy of Sciences. Dr. Zewail was recognized for his pioneering efforts using ultra-short laser flashes to monitor chemical reactions. These ultrafast lasers image chemical reactions as



Dr. Ahmed Zewail

bonds form and break in real time or at a scale of femtoseconds — 0.0000000000000001 of a second (a millionth of a billionth of a second). Because of the ultrafast time scales involved in these studies, this field has been dubbed "femtochemistry." Femtochemistry enables scientists to understand how and why certain chemical reactions take place by probing chemical reactions at their most fundamental level.

"The Air Force played a critical role in some of the first experiments done in the field," said Dr. Zewail. "My experience with the Air Force has been an extremely positive one."

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0.0000000000000001
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a femtosecond

(translation: a millionth of a billionth of a second)