

Topic Page: [Zewail, Ahmed H.](#)

Summary Article: **Zewail, Ahmed H**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

Egyptian-born US chemist who was awarded the Nobel Prize for Chemistry in 1999 for his use of femtosecond spectroscopy in the study of the transition states of chemical reactions.

Atoms or molecules move very fast during a chemical reaction, which can last only a millionth to a billionth of a second. The speed of reaction is so fast, that studying how molecules interact was not possible until the development of femtosecond spectroscopy. This technique was developed by Zewail and uses very short laser flashes to image the spectrum produced by reacting molecules. The speed of the laser flash is a femtosecond or 10^{-15} seconds, the same time scale as the movement of the reacting molecules. Scientists are now able to observe each stage of a chemical reaction, from the starting point through to the end of the reaction. Importantly, the technique allows the determination of what intermediate states are formed as the reaction progresses. The technique has had such a significant impact that a new branch of science, femtochemistry, has been named after this area of physical chemistry.

Zewail was born in Damanhour, Egypt. He received his BSc and MSc degrees from Alexandria University, Egypt, in 1967 and was awarded his PhD from the University of Pennsylvania, USA, in 1974. He was an IBM research fellow at the University of California at Berkeley for two years, before joining the faculty at the California Institute of Technology (Caltech), Pasadena, in 1974. He was appointed professor of physics at Caltech in 1982 and became the first Linus Pauling professor of chemical physics in 1990. He received the order of merit, first class, from President Hosni Mubarak of Egypt in 1995 and had a postage stamp with his portrait issued in Egypt in 1998.

APA

Chicago

Harvard

MLA

Zewail, Ahmed H. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. Abington, UK: Helicon. Retrieved from https://search.credoreference.com/content/topic/zewail_ahmed_1946



© RM, 2018. All rights reserved.



© RM, 2018. All rights reserved.

APA

Zewail, Ahmed H. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. Abington, UK: Helicon. Retrieved from https://search.credoreference.com/content/topic/zewail_ahmed_1946

Chicago

"Zewail, Ahmed H." In *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*, edited by Helicon. Helicon, 2018. https://search.credoreference.com/content/topic/zewail_ahmed_1946

Harvard

Zewail, Ahmed H. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. [Online]. Abington: Helicon. Available from: https://search.credoreference.com/content/topic/zewail_ahmed_1946 [Accessed 15 September 2019].

MLA

"Zewail, Ahmed H." *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*, edited by Helicon, 2018. *Credo Reference*, https://search.credoreference.com/content/topic/zewail_ahmed_1946. Accessed 15 Sep. 2019.