Video Article

# The 2009 Lindau Nobel Laureate Meeting: Sir Harold Kroto, Chemistry 1996

Harold Kroto[1]
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## Abstract

English Chemist Harold Kroto shared the 1996 Nobel Prize in Chemistry with Robert Curl and Richard Smalley for their discovery of Fullerenes ($C_{60}$), molecules composed completely of carbon ($C_{60}$) that form hollow spheres (also known as Buckyballs), tubes, or ellipsoids. These structures hold the potential for use in future technologies ranging from drug development and antimicrobial agents, to armor and superconductors.

Harold Kroto was born in Wisbech, Cambridgeshire in 1939 and grew up in Bolton. Educated at Bolton School, he entered Sheffield University in 1958 to study Chemistry. During his time there he played tennis for the university team, illustrated the university's magazine covers, and played folk music with other students. Enjoying his time at Sheffield very much, he chose to stay on and complete a Ph.D. in Chemistry under Richard Dixon.

Following graduation in 1964, Kroto went on to post doc at the National Research Council (NRC) in Ottowa, Canada where microwave spectroscopy became his specialty. After two years of study at the NRC he spent a year at Bell Laboratories. He then accepted a position as a tutorial fellow at the University of Sussex, where he was soon offered a permanent position. There, he applied his expertise in microwave spectroscopy to the field of astronomy and spent several fruitful years detecting long carbon chains in the interstellar medium.

Upon hearing of the work of Richard Smalley at Rice, who developed a laser that could vaporize graphite, Kroto thought they could use Smalley's instrument to see carbon chains similar to those they had observed in interstellar matter. He suggested his idea for an experiment to Bob Curl, also at Rice. In 1985 he traveled to Rice to perform the experiment (and also to visit a half-price bookstore he'd heard about in Houston).

Although he felt certain that the apparatus would create the carbon chains, the experiment revealed a totally unexpected result: the spontaneous formation of spherical shapes, which they called Buckminster Fullerenes in honor of the architect who popularized the geodesic dome.

Though he is pleased to have received the Nobel Prize, Kroto does not believe in prizes or competition as a motivator for scientific (or athletic) progress. Rather, he believes that the pursuit of science or athletics should be simply for the enjoyment or interest in the subject matter, and he prefers to investigate subjects that other people aren't working on.

Kroto has mixed feelings about the effect the prize has had on his life. On the one hand, he would like to be able to spend more time pursuing graphic design, something he has always deeply enjoyed. On the other hand, he now enjoys a sense of responsibility for supporting the scientific community.

As an atheist, Kroto feels that science is, in itself, atheistic. He doesn't accept anything without evidence. Kroto expresses concern about people holding positions of power who do not use evidence as a basis for decision-making. "When they are prepared to accept one of 20-30 stories from thousands of years ago, I wonder what else they are prepared to accept when it comes to decisions which affect me?"

Kroto is particularly worried about the effect of policies that require the teaching of non-scientific ideas, to the detriment of evidence-based scientific education. He points to the forced teaching of creationism in public schools and the existence of a "creation museum" in the United States as sources of misinformation that have given rise to "a whole generation of school children who've been abused."

## Video Link

The video component of this article can be found at https://www.jove.com/video/1576/

## References

1. Les Prix Nobel. The Nobel Prizes 1996, Editor Tore Frängsmyr, [Nobel Foundation], Stockholm, (1997).
2. "Robert F. Curl Jr. - Interview." Nobelprize.org. Web. 06 Apr. (2010). http://nobelprize.org/nobel_prizes/chemistry/laureates/1996/curl-interview.html

 