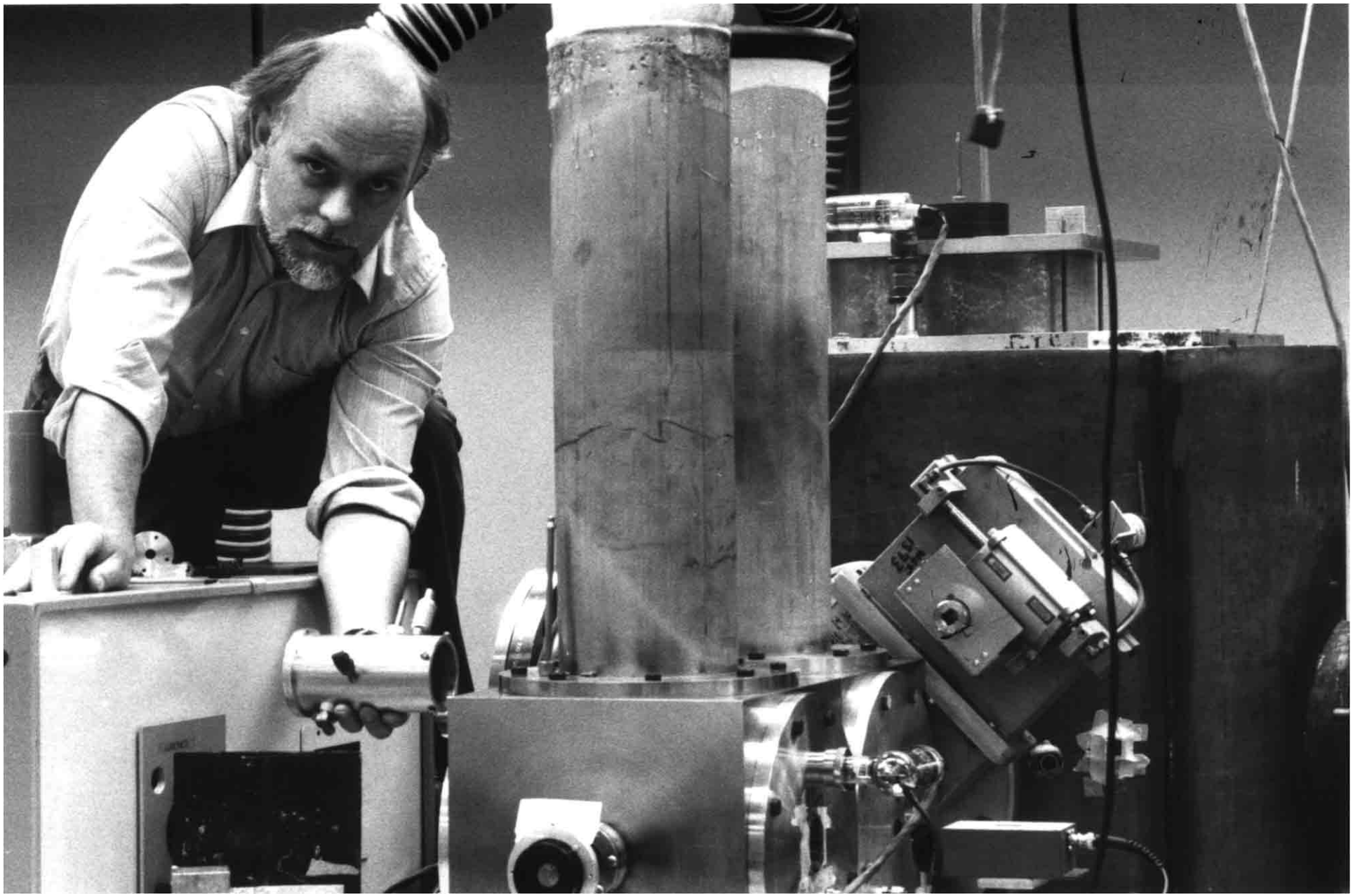
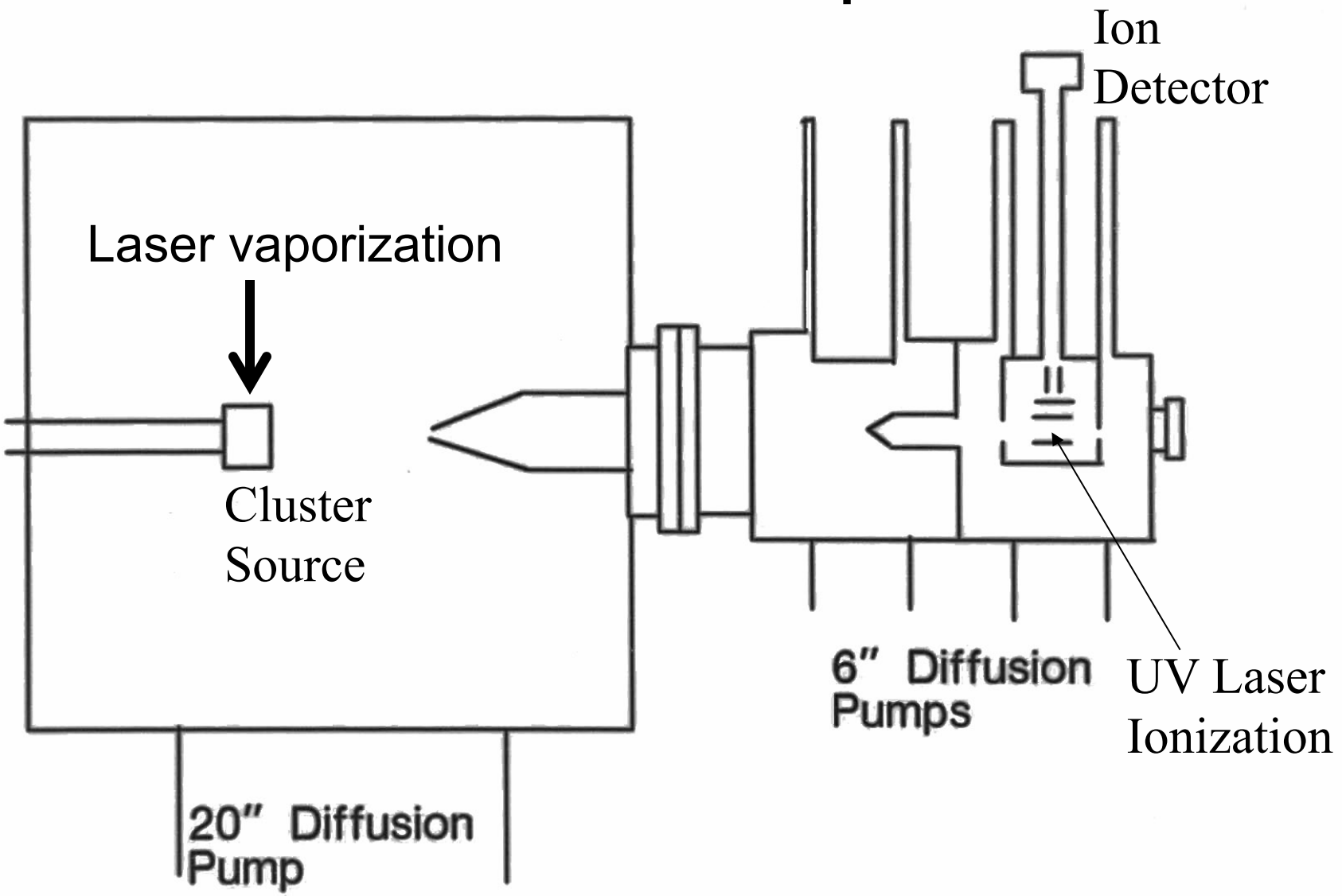
The Discovery of C_{60}

ACS Philadelphia 2016

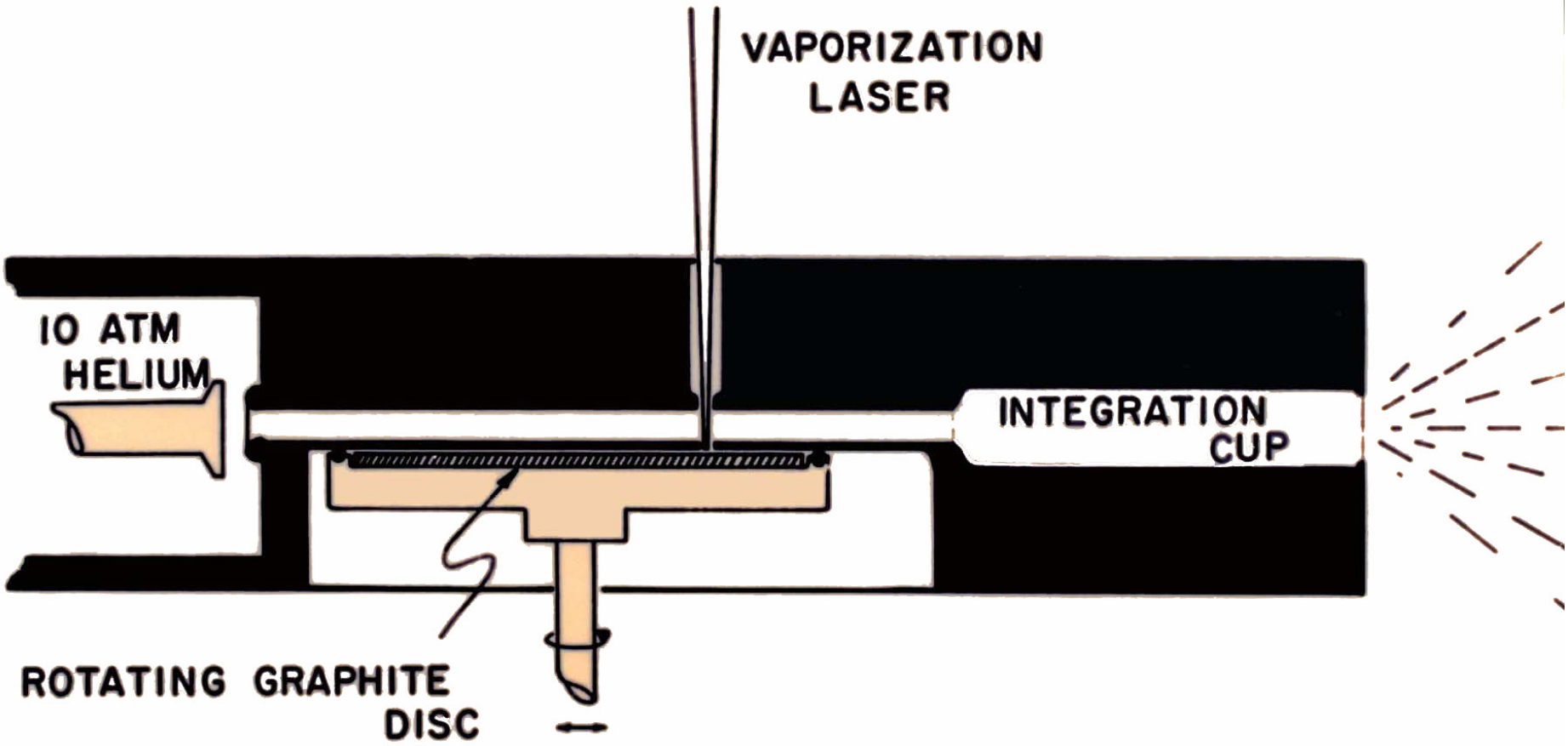
Rick atop Ap2



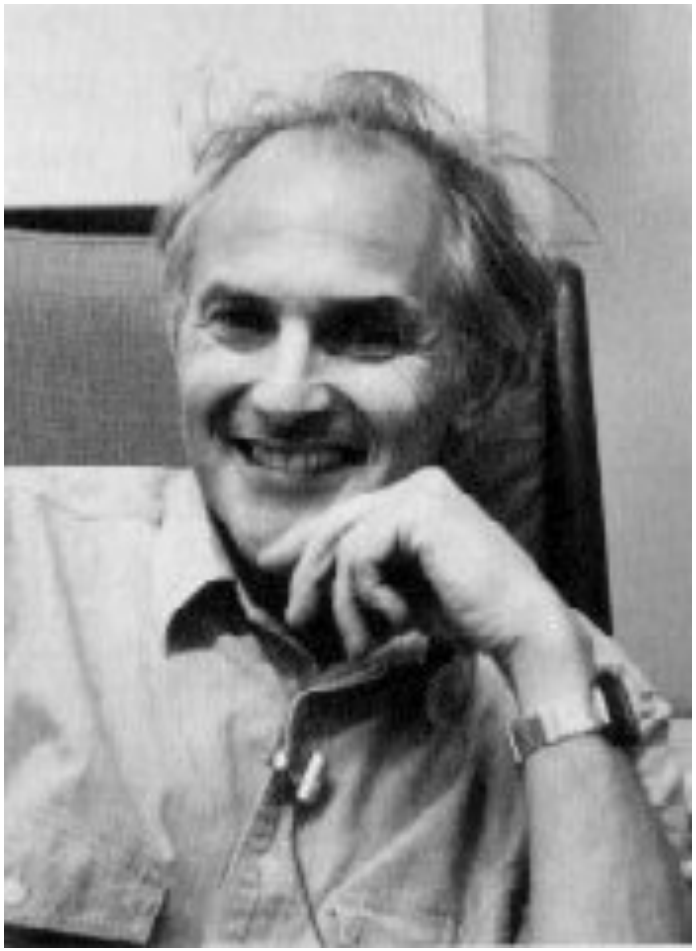
Cluster beam TOF mass spectrometer



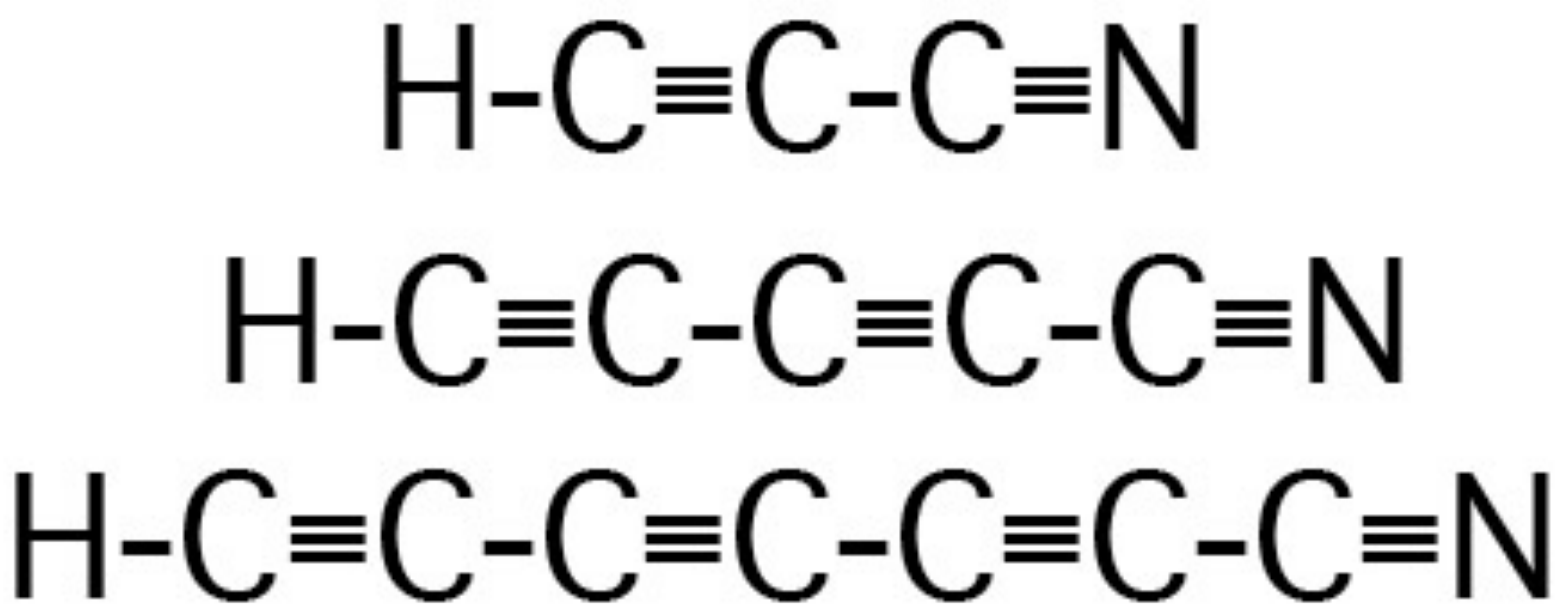
Cluster beam source



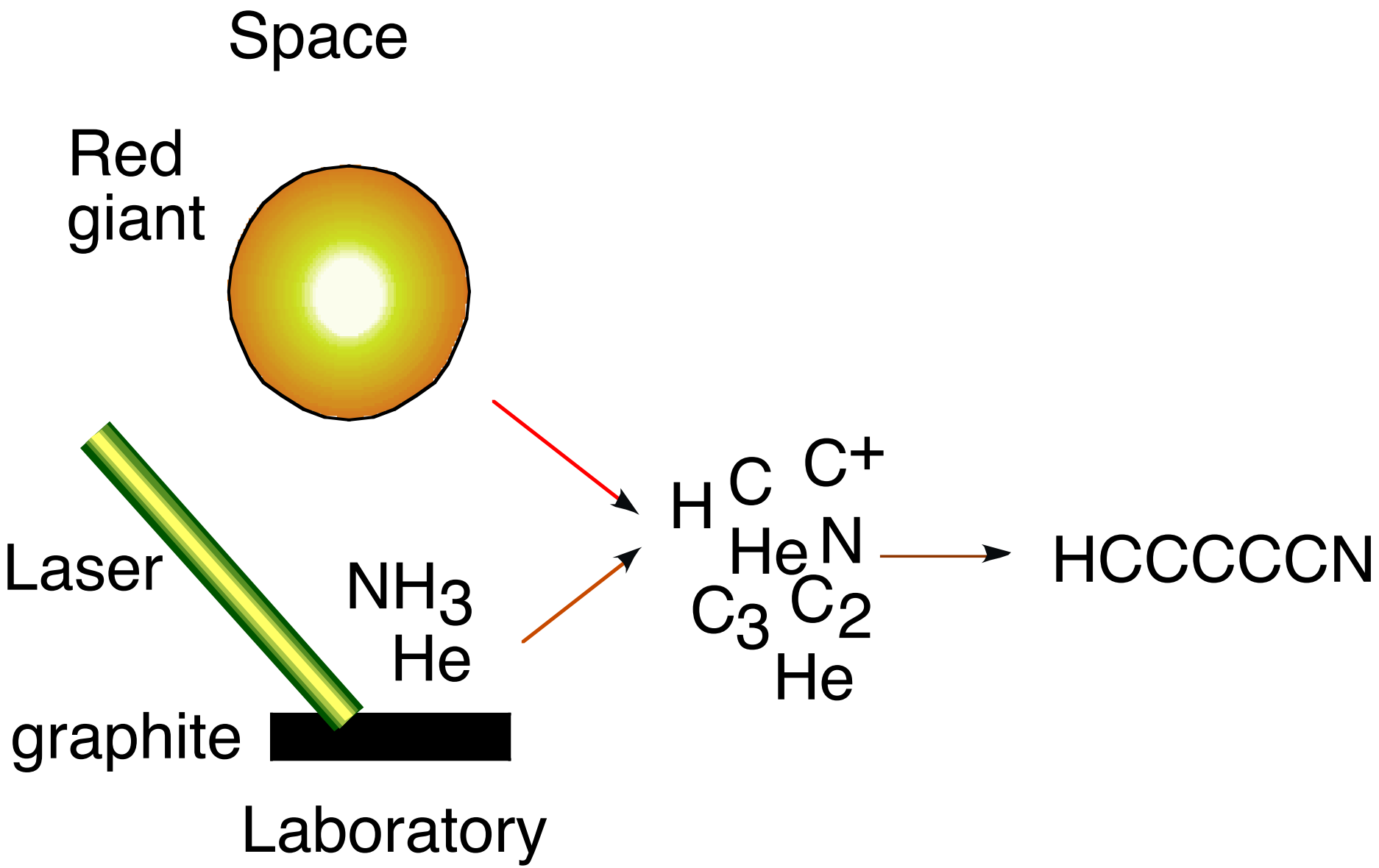
Harry Kroto



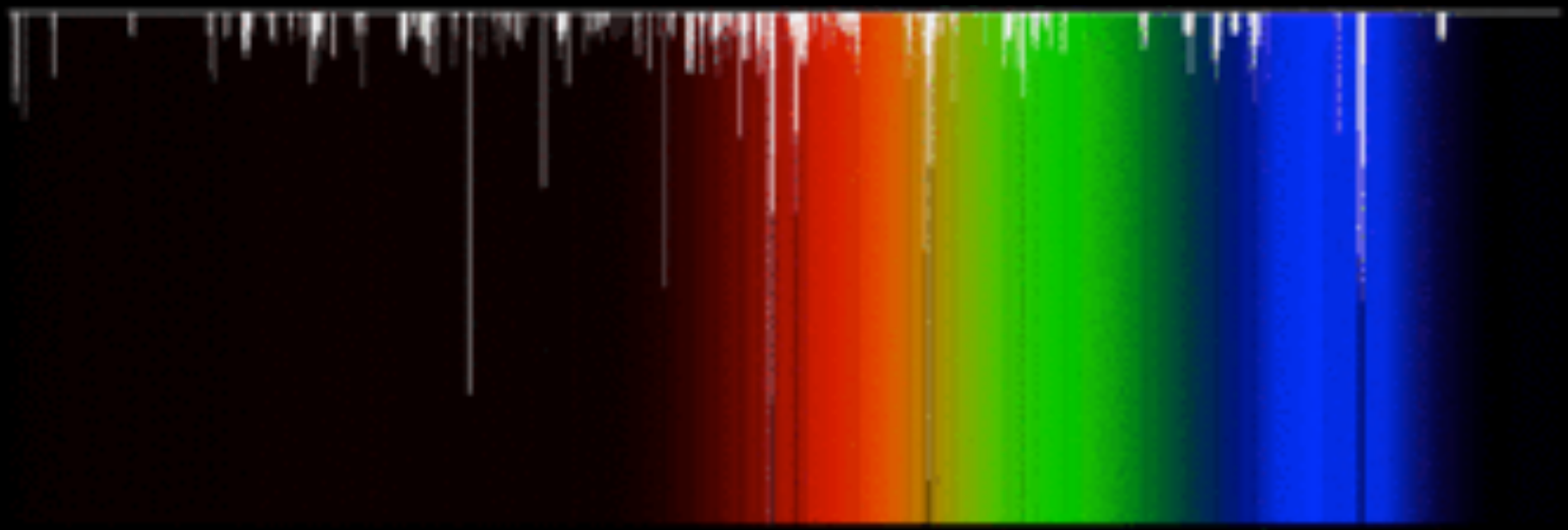
Carbon Chain Molecules Found in Interstellar Clouds



Emulating the Stars in the Lab



The Diffuse ISB's



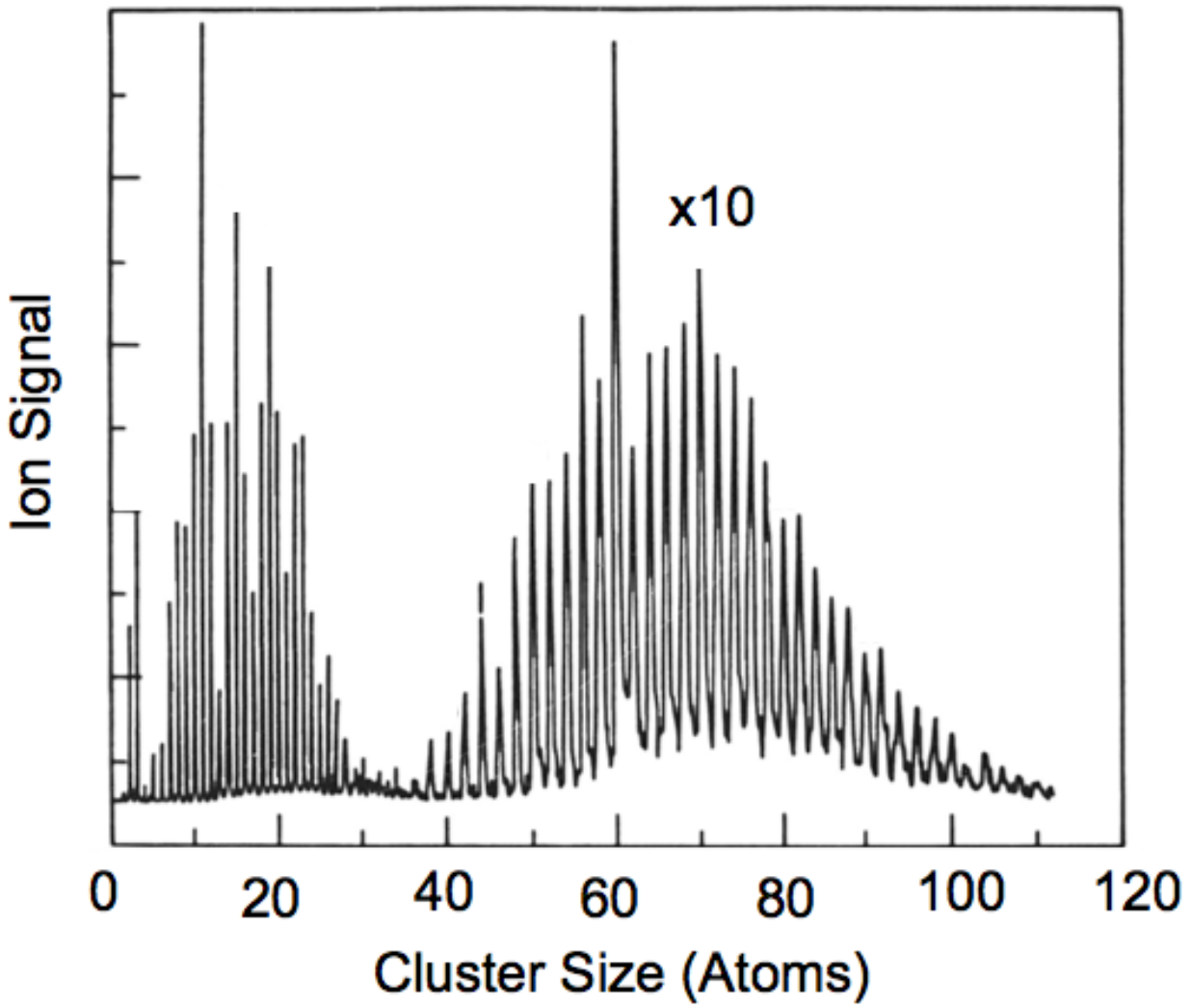
NASA

Origin of the Diffuse Interstellar lines

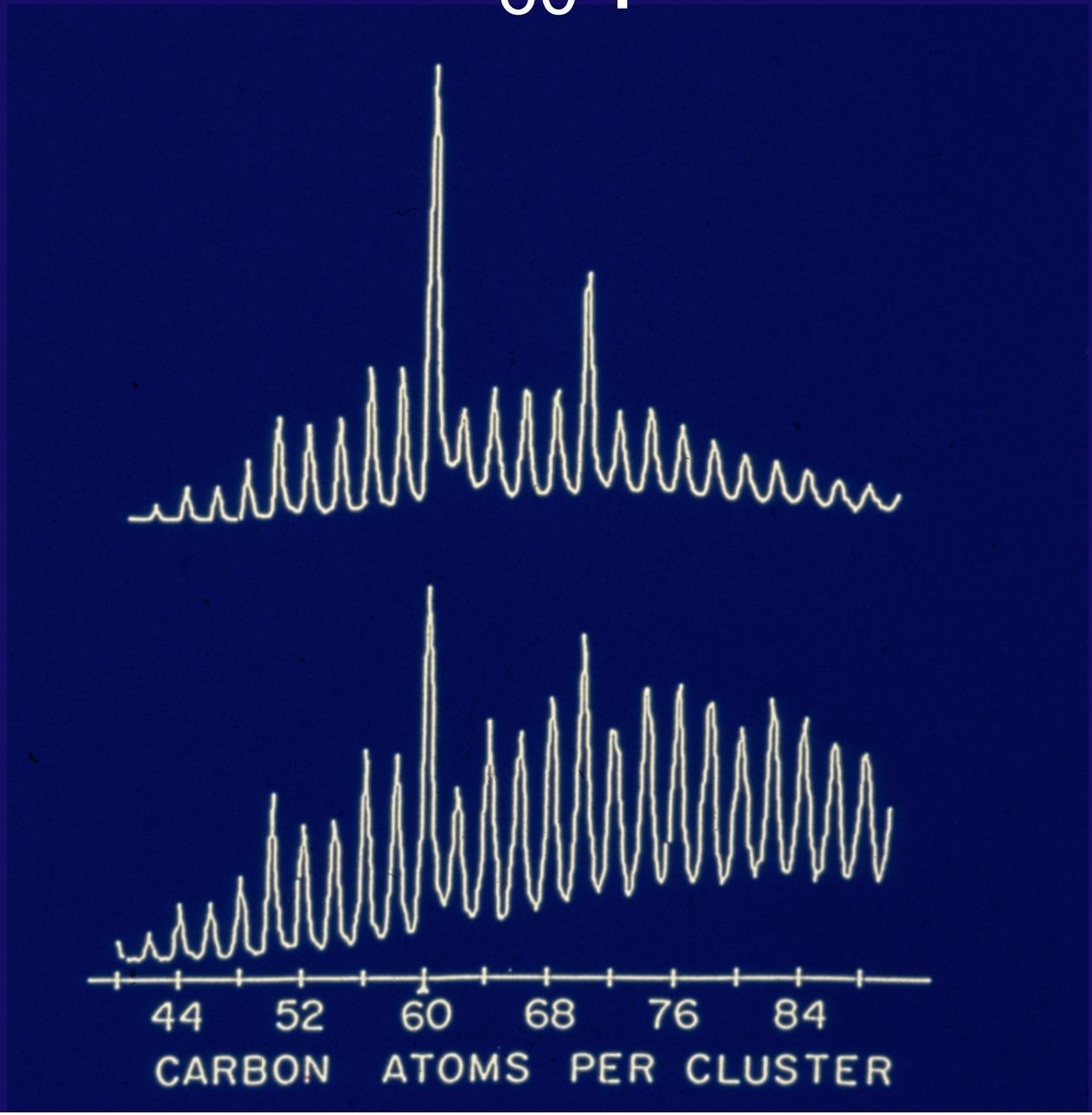
Here I suggest that the lines are caused by the absorption of polyatomic molecules and that the line width is the result of radiationless internal conversion between stable states. Furthermore, I propose that the absorbing species are long chain carbon molecules, C_n, where *n* may lie in the range 5-15.

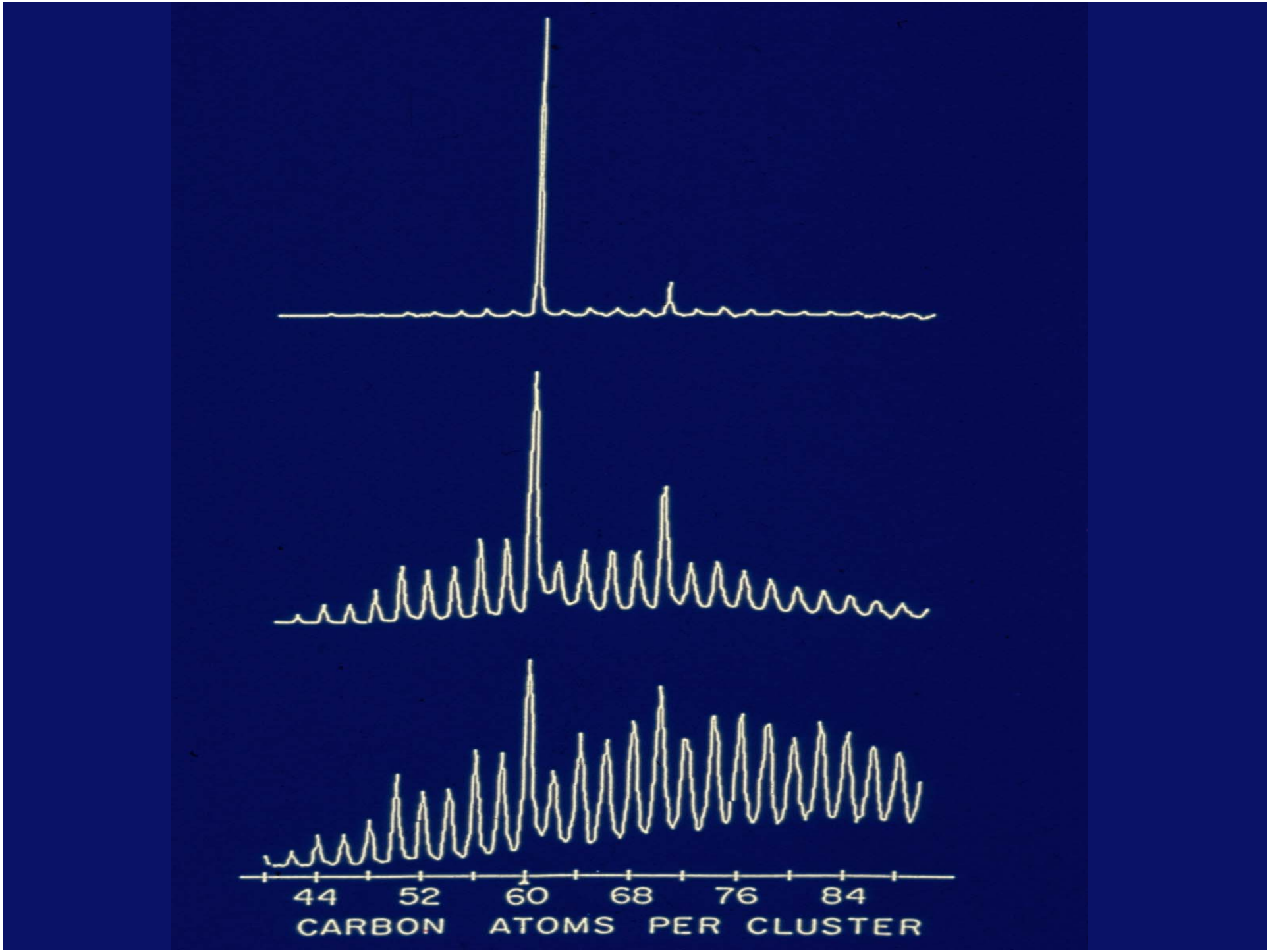
A. E. Douglas, *Nature* **269**, 130 (1977)

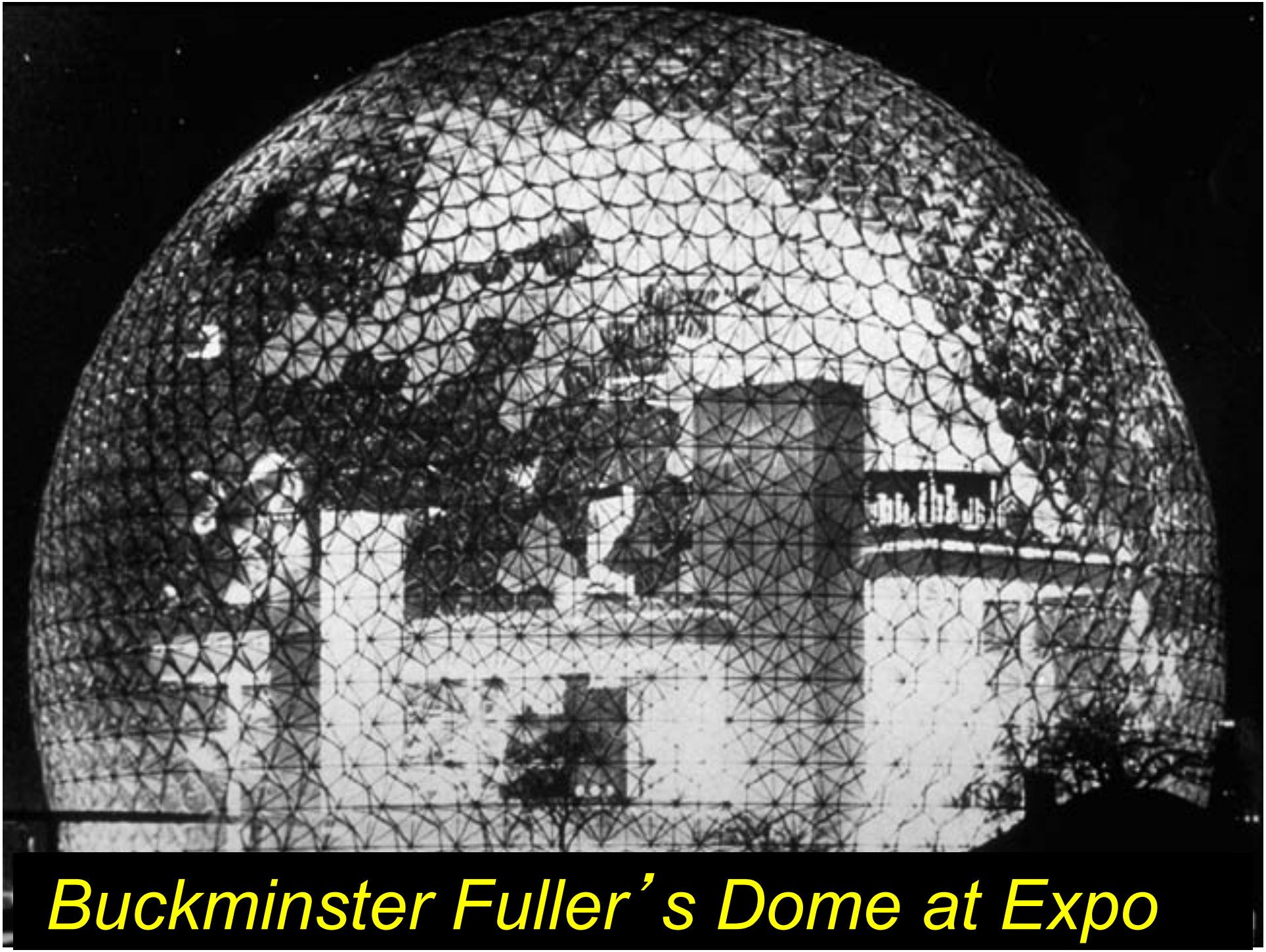
Rohlfing, Cox, and Kaldor, Supersonic Carbon Cluster Beams



Variations in C_{60} peak intensity




44
52
60
68
76
84
CARBON ATOMS PER CLUSTER



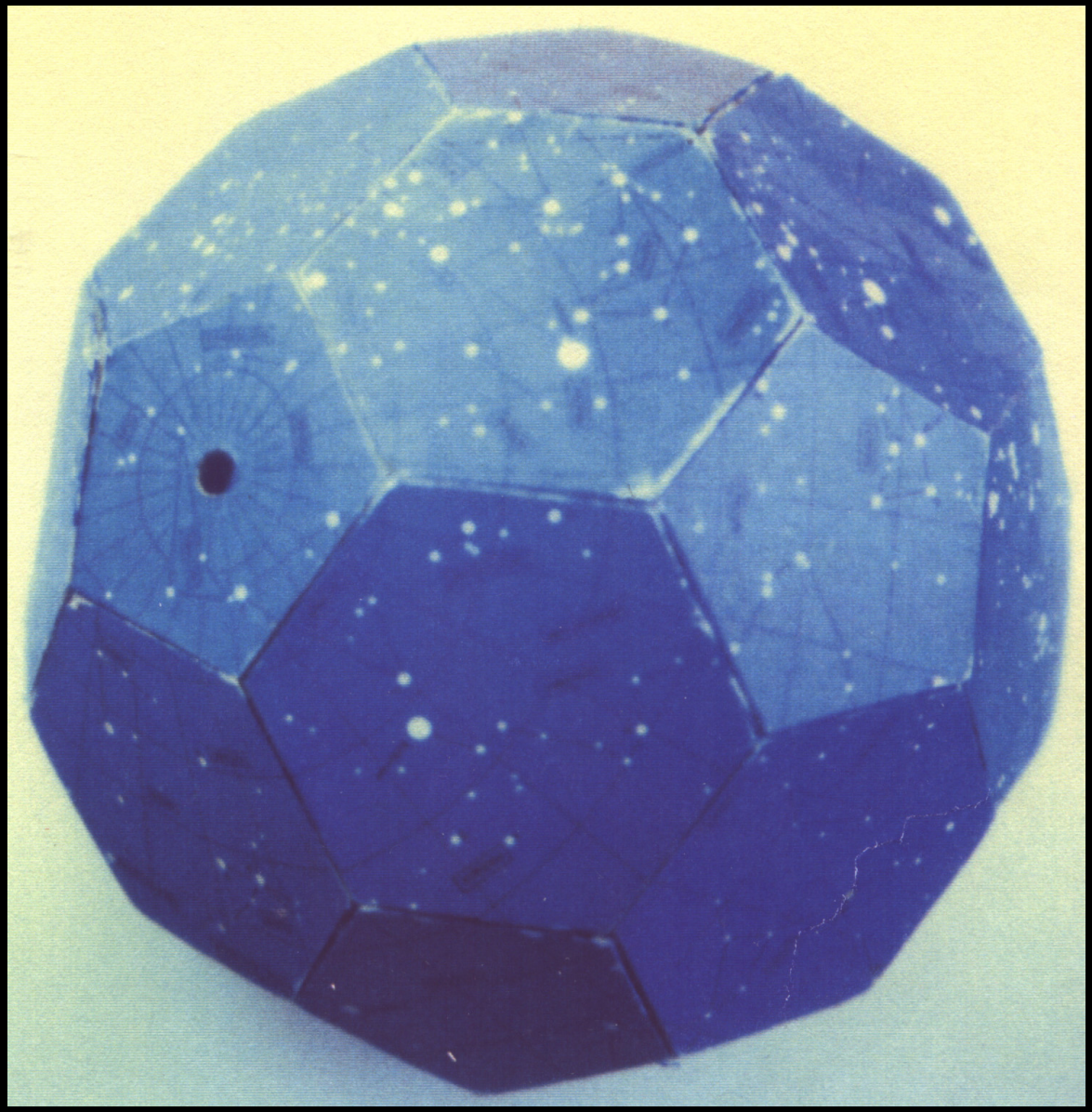
Buckminster Fuller's Dome at Expo


A
B
C
G
H

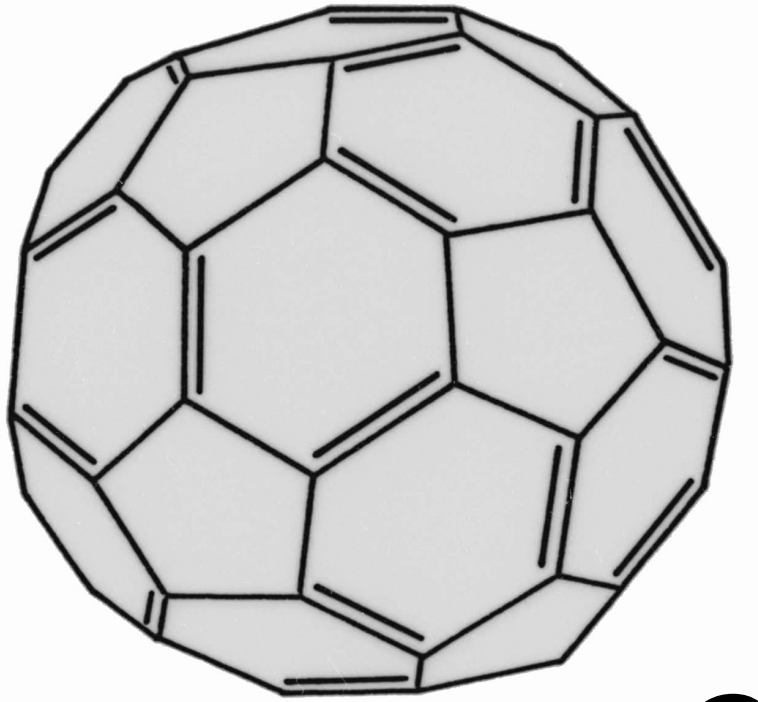
Kroto's

Stardome

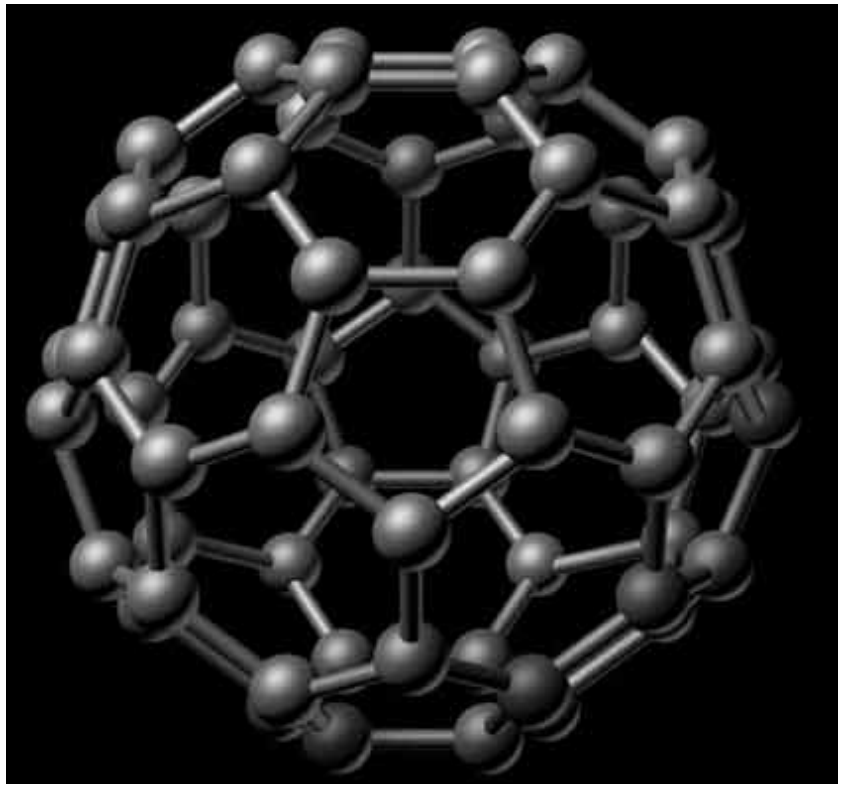
Map of the sky on a truncated icosahedron consisting of pentagons as well as hexagons



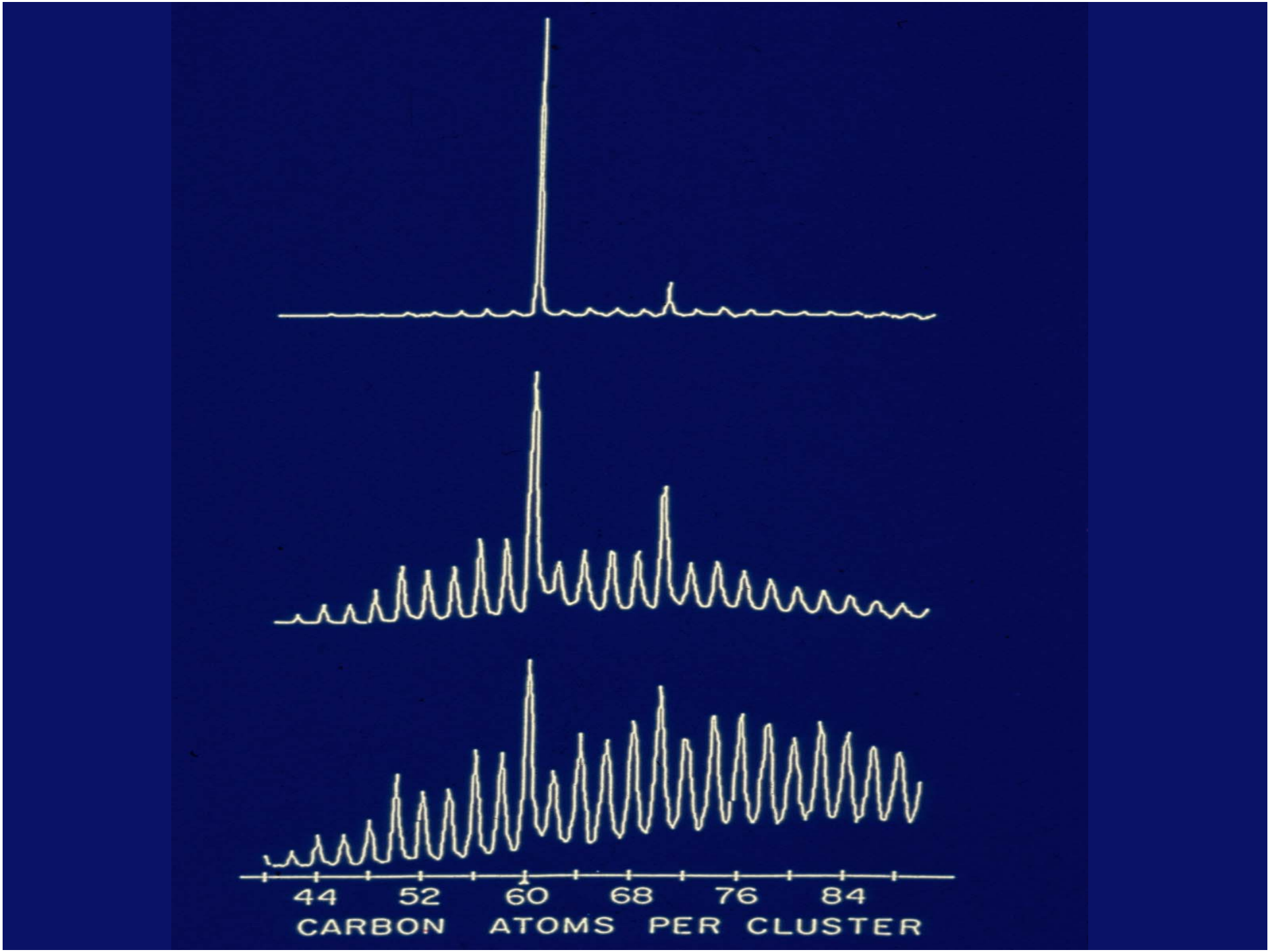
Buckminsterfullerene



C_{60}



Osawa 1971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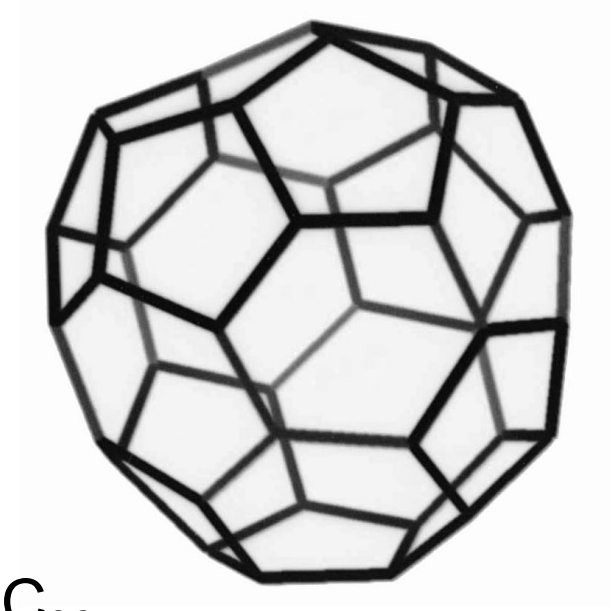
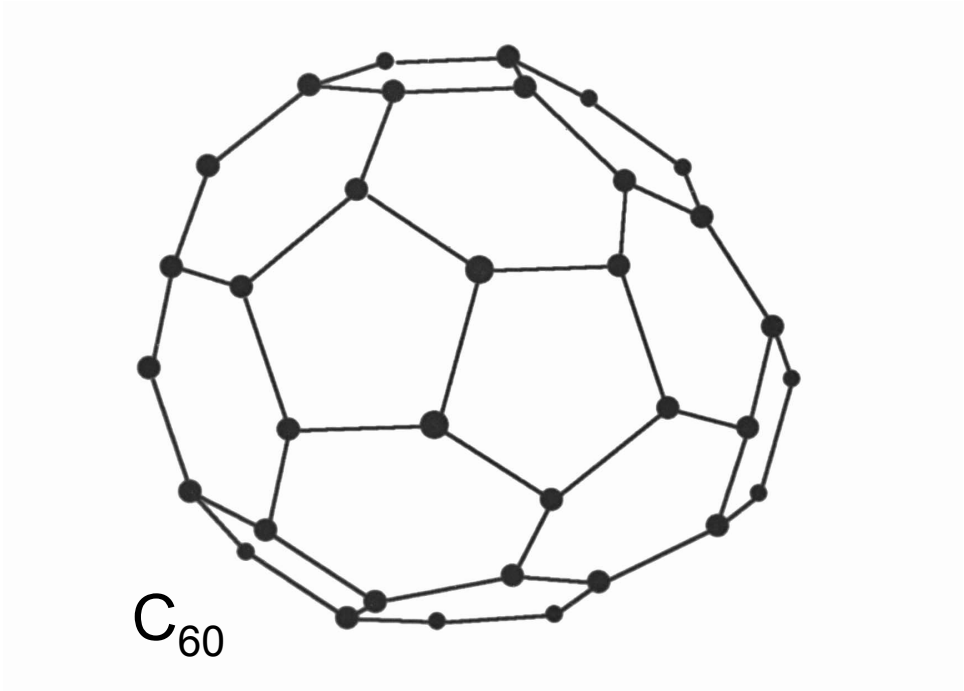
CARBON ATOMS PER CLUSTER

Adjacent Pentagon Fullerenes



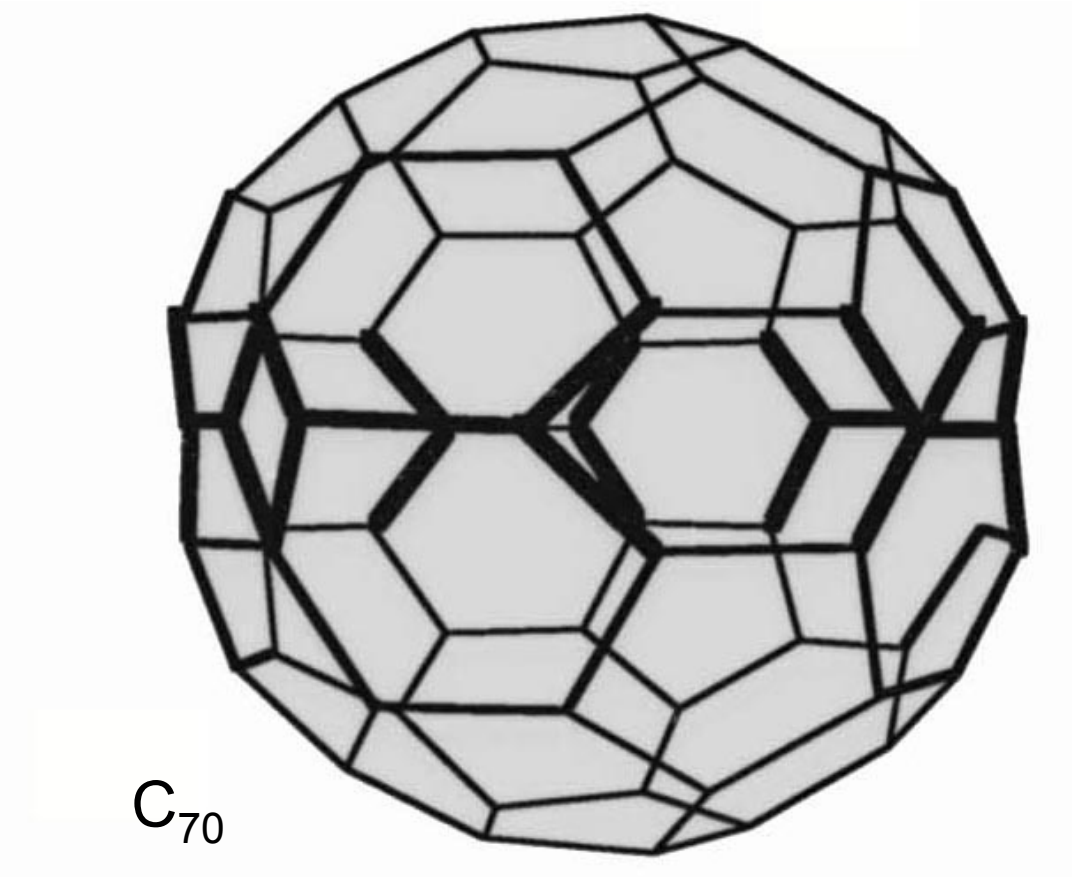
C_{36}



C_{60}

One of 1812 fullerene isomers with 60 carbon atoms

After bucky C_{60}, this C_{70} structure is the first without adjacent pentagons



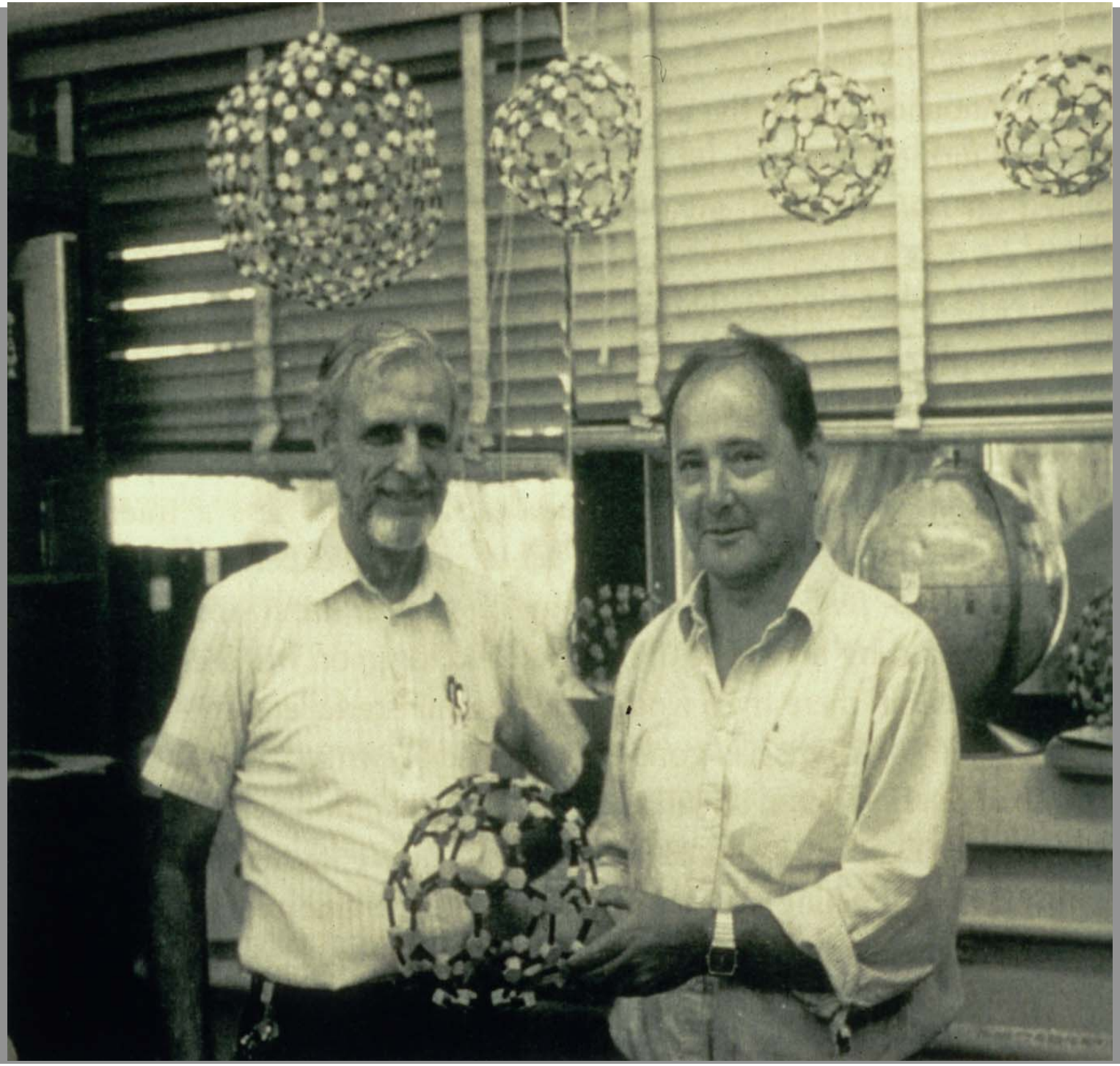
C_{70}

Ariadne

Daedalus . . . has conceived the hollow molecule, a closed spherical shell of a sheet-polymer like graphite, whose molecules are flat sheets of benzene-hexagons. He proposes to modify the high-temperature graphite process by introducing suitable impurities into the sheets to warp them .. reasoning . . . that it will ultimately close on itself.

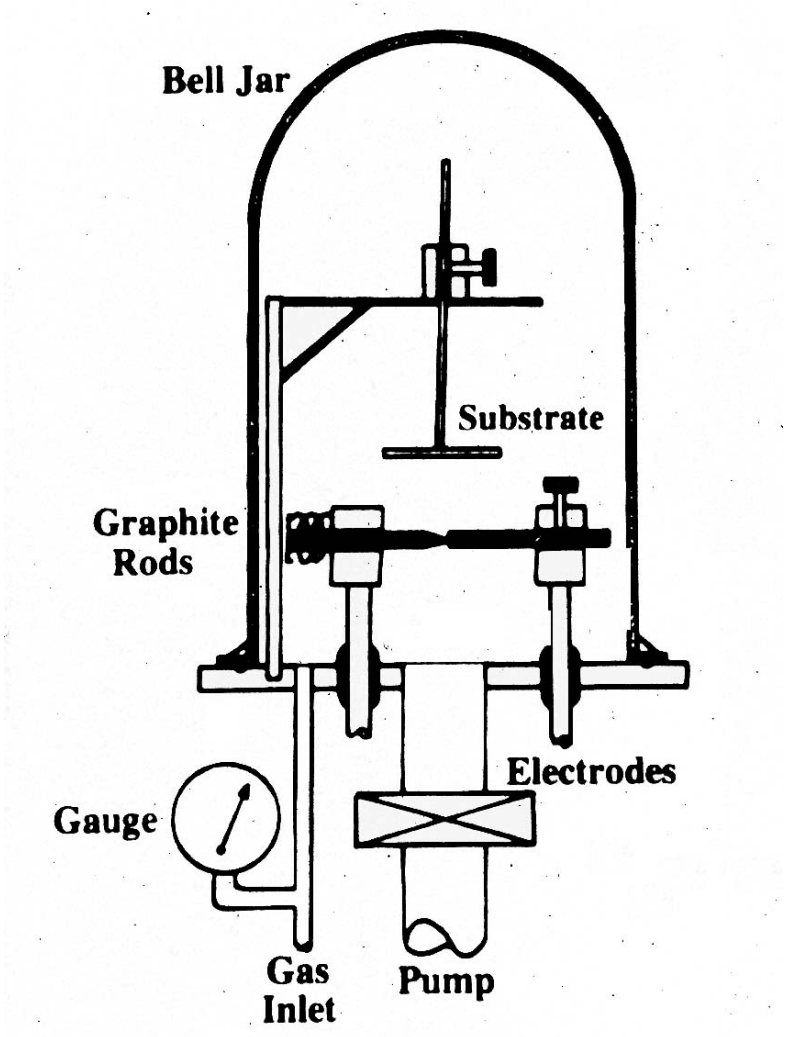
David E. H. Jones

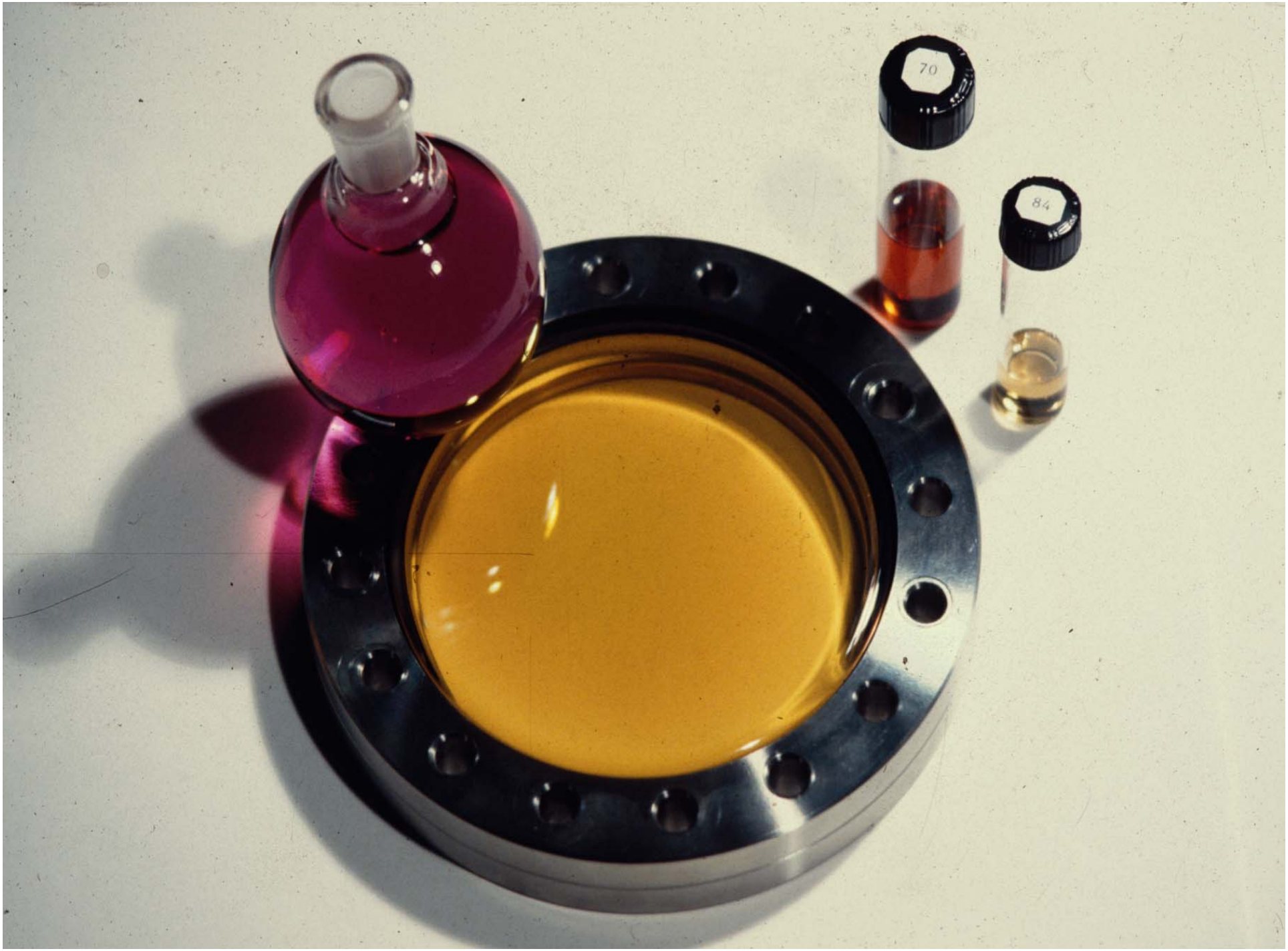
New Scientist, 3 November 1966



Arc Apparatus for Making Fullerenes

Krätschmer
et al.




70
84

The diffuse interstellar bands

In the original letter to *Nature,* we suggested that buckminsterfullerene might be a carrier of the dib's.

After enormous creative effort, John Maier's group found two clear matches* of C60+.

E.K. Campbell, M. Holz, D. Gerlich and J.P. Maier *Nature.* ***523****: 322* (2015)

Konarka flexible portable panel