Dr W Kratschmer
Max-Planck-Institut fur Kern Physik
Heidelberg
West Germany

28th February 1990

Dear Dr Kratschmer

I understand that you have written a paper "Search for the UV and IR Spectra of C_{60} in Laboratory - Produced Carbon Dust" and I wonder if it has been published.

We have confirmed your result with regard to the bands which might be associated with C_{60}. In our experiments we have only observed bands at Argon pressures of 10 to 20 torr and the bands are weaker.

I would be grateful if you could let me know about your experimental conditions, for example, were the measurements taken at low temperatures and what was the purity of the carbon rods used?

Yours sincerely

Jonathan Hare

Enc

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Ref.: Your letter of Feb. 28, 1990

March 19, 1990

Dear Mr. Hare,

thank you for your letter and your spectra. It is nice to know that our spectral data on carbon smoke are also observed by other investigators working under experimental conditions which probably are different from ours. This removes to some extend our main concern, namely that the IR (and UV) features are produced by adsorption of - or chemical reaction with - contaminations (e.g. pump oil or other compounds present in our vacuum system).

The IR and UV spectra of our carbon smokes will be published in "Dusty Objects in the Universe", editors E. Bussoletti and A.A. Vittone (Kluwer, Dordrecht). For your information I have enclosed the draft of our contribution which we mailed for printing.

The "C_{60}" production is no black magic; is is in fact very easy. After a few trials you will find out for yourself what is important. Here is how we do it:

We use an old bell-jar evaporator refurbished by a turbo-pump. It is equiped by a cold trap to the high vacuum side and an oil trap to the rough vacuun side. The vacuum we obtain is in the order of 10^{-5} torr. Usually we use Helium as quenching gas and apply 100 torr. Our carbon rods consist of comercially available spectral pure graphite rods of 3 mm diameter. Usually we mashine one tip conical on a lathe, the other tip we keep flat. The current we apply ranges from 50 to 100 Amps. When we start, we usually increase the current until smoke production begins (this can be easily discerned by observing the scattering of the light emitted from the hot carbon tip) and stay at this state for a few seconds. Then we turn the current down to avoid excessive heating (we have no water-cooled electrodes) and restart the procedure 10 to 20 seconds later. A simple mechanical spring arrangement pulls the rods together and provides electrical contact. After a few turns, when the spring pressure becomes insufficient or when the burning conditions get unsteady, we stop. We pump the quenching gas off and let the evaporator cool down. In order to collect as much smoke as possible one can place the substrate at a few cm distance to the carbon tip. We also obtained good spectra from soot-samples we scraped off from the electrodes and other sooted parts in the vicinity of the carbon rods. We mixed the soot into KBr and pressed a pellet. The other experimental details are described in our paper.

In case you have more questions, don't hesitate to mail, fax, or phone me. My phone number is 0049 6221 516-481 or -491. My best regards to Mr. Kroto.

Good luck!

W. Krätschmer

(W.Krätschmer)