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Mr. Rudy M. Baum
CHEMICAL & ENGINEERING NEWS
American Chemical Society
1155 16th St., N.W.
Washington, D.C. 20036

Dear Mr. Baum:

This letter is in regards to your articles in C&EN on carbon clusters, particularly C₆₀, describing the work of Smalley and co-workers.

I enjoyed very much your first article (C&EN, Dec. 23, 1985). In my opinion that article was a good example of excellent scientific reporting: bringing exciting scientific news to a wide audience, in a timely manner, with references to the journal sources, and giving credit to others (the Exxon group). It was your article that brought to my attention the fascinating results of Smalley and co-workers on C₆₀ and stimulated much of my own thought on the subject.

I find, however, your recent article (C&EN, Aug. 29, 1988), although still well-written, to be a one-sided story. The question now is not whether closed-shell or spiraling carbon clusters (fullerenes) may exist, but rather what role do they play in such processes like the formation of soot in hydrocarbon flames and interstellar dust.

The study of soot formation dates back to Michael Faraday. A large amount of information on the subject has been accumulated, and a significant progress has been achieved in understanding the phenomenon in the last few decades. Ignoring most of these experimental and theoretical data, Smalley and co-workers suggested [*J. Phys. Chem.* **90**, 525 (1986)] that soot particle formation can be explained by the growth of spiraling carbon clusters. Your article reiterates their proposal. However, every expert on soot formation I know has reservations against the Smalley's model. Some of the objections have been published (see, *e.g.*, the paper enclosed). The main argument of Smalley in favor of the spiraling model is the recent experimental findings of Professor Klaus Homann in Darmstadt, who reported carbon cluster formation in a sooting flame. Nonetheless, Homann himself (and I have clarified this issue with him personally a couple of weeks ago) has never claimed or implied the interpretation given to his results by the group of Smalley. On the contrary, Homann considers the formation of clusters a secondary process to soot formation. The Smalley's proposal on the role of fullerenes in the interstellar environment is also not uniformly adopted by the astrophysical community.

Unfortunately, much of the critical data is still missing, which places the discussion on the role of the fullerene chemistry on a level of "personal opinions" rather than "proven scientific facts." In such a situation, an article like yours may provide an opportunity to bring into attention of the reader all the pros and cons. And regreffully, that is exactly what missing in your article.

Sincerely,



Michael Frenklach
Associate Professor of Fuel Science

Enclosure

p.s. This letter is my personal communication to you. I have no intentions, and thus do not give a permission, to publish this as a *Letter* or quote it in your writings.