Morphology of Aggregates.
II. Shape and Bulkiness Factors of Carbon Black Aggregates from Electron Microscopy

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Carbon black, in common with other colloidal materials formed in a flame, exists in the form of primary aggregates in which the primary particles are fused together. We have developed techniques for dispersing carbon black down to the level of the primary aggregates, spreading such a dispersion on a conventional grid with a supporting film, taking electron micrographs in a statistically unbiased manner, and analyzing the morphology of the primary aggregates. The aggregates as seen in the electron micrographs are treated as two-dimensional silhouettes, of which we can determine various parameters including the projected area, anisometry and bulkiness. Within a given sample of carbon black, there is a wide spread of aggregate size, so that a statistical treatment of the results is required.

The results to be presented will illustrate the scope and validity of the method. Average morphological parameters will be presented for various grades of carbon black covering a range of particle size and "structure." A comparison of these results with those obtained for computer-simulated flocs will also be given.