

Parker C A & Rees W T. Correction of fluorescence spectra and measurement of fluorescence quantum efficiency. *Analyst* 85:587-600, 1960. [Admiralty Materials Lab., Holton Heath, Poole, Dorset, England]

This paper describes how fluorescence emission and excitation spectra may be corrected for instrumental factors to give 'absolute' spectra. The advantages and applications of the corrected spectra in analytical chemistry and photochemistry are discussed. [The SCI® indicates that this paper has been cited over 435 times since 1961.]

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"This paper was prepared during a period (1958-9) when the interest of many analytical chemists was being alerted to the possibilities of spectral measurements of fluorescence, my own interest having been aroused some years earlier by contacts with E.J. Bowen, FRS, of Oxford University, whose enthusiasm for photochemistry and fluorescence was infectious, and whose earliest work on fluorescence dates back to the 1930s.^{1,2} I undertook the preparation of the paper almost by chance, largely as a result of the many queries I was receiving about equipment for measuring fluorescence spectra and the errors that can arise. This gives a clue as to the reason why the paper has been so often cited.

"Thus, it gives a detailed method for measuring and reporting corrected fluorescence emission spectra. Although not new in principle, this information was not readily available at that time. Second, it outlines the method whereby such data may be used to derive precise relative values of fluorescence quantum efficiency of compounds in solution, and explains all the common pitfalls in this procedure—again not new in principle, but not generally appreciated at that time. Third, it quotes some new values of the fluorescence efficiency of some oft-measured compounds, and these values are frequently quoted in later papers along with those of many other workers. Fourth, the paper includes two good examples of corrected emission spectra and their relationship to absorption spectra—used by later authors as illustrations in books and reviews. Fifth, the paper gives the method of correcting fluorescence *excitation* spectra and describes the relationship between the excitation and absorption spectrum. Again the principle was not new but it was not generally appreciated at that time, and detailed instructions for making the necessary corrections were not readily available.

"I am greatly indebted to my co-author, the late W.T. Rees, FRSC, who made many of the measurements illustrating the principles, and contributed much in the way of discussion during the preparation of the paper. The methods and principles have been expanded and discussed in more detail in my later textbook."³

1. **Bowen E J.** Fluorescence in solution. *Trans. Faraday Soc.* 35:15-21, 1939.
2. **Bowen E J & Sawtell J W.** The fluorescence efficiencies of solutions of hydrocarbons. *Trans. Faraday Soc.* 33:1425-9, 1937.
3. **Parker C A.** *Photoluminescence of solutions—with applications to photochemistry and analytical chemistry.* Amsterdam: Elsevier, 1968. 544 p.