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A New Insight on Substituent Additive Effects to Physical-Organic Chemistry Class-Room

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ABSTRACT

Since the discovery of Hammett equation in mid 1930s, the interest in its use is ever increasing among physical-organic chemists in elucidating the reaction mechanisms and the site of attack in several aromatic systems. In this article we have tried to explore the cumulative effects of substituents on the reaction rates by Hammett equation and on the activation energies in the reactions of polysubstituted benzene derivatives. In the correlation of Hammett equation while explaining the cumulative effects of substituents, we have used σ^- values for conjugative electron withdrawing substituents and σ^+ values for mesomerical electron donating substituents if the normal substituent constants failed to give good correlation. To exemplify the title concept, we have considered several reactions of polysubstituted benzene derivatives.

Keywords: Hammett equation, cumulative effects of substituents, additive effects.