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## Vibronic Studies of Daunorubicin and Its Complex with DNA

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Daunorubicin belongs to an important class of antitumor antibiotics which are able to bind DNA and to inhibit its enzymatic synthesis. Several physical methods [1, 2] have been employed to investigate the nature of the bonds between the drug and the nucleic acids. It has been so possible to suggest the existence of at least two binding sites involving the chromophore and the amino sugar moiety of daunorubicin [3].

In order to obtain information on the electronic and vibrational excited states of the drug as well as on the interaction mechanism, we have studied the resonance Raman scattering and the fluorescence spectra and excitation profiles of the pure compound and the complex. The results obtained from the combined analysis of the data allowed to interpret the complex absorption feature of the pure compound at about 500 nm as due to a single electronic state with its vibrational structure. In addition evidence for the existence of other electronic excited states has been obtained especially from the fluorescence excitation profile.

The remarkable spectral changes by DNA addition furnish further evidence for the formation of the complex and show the specific interaction of the chromophore.

### References

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- 3 W. A. Remers, 'The Chemistry of Antitumor Antibiotics', Vol. 1, Ch. 2, John Wiley and Sons (1979).