

spectral overlap

In the context of radiative energy transfer, the integral,

$$J = \int_0^{\infty} f_D'(\sigma) \varepsilon_A(\sigma) d\sigma$$

which measures the overlap of the emission spectrum of the excited donor, D, and the absorption spectrum of the ground state acceptor, A; f_D' is the measured normalized emission of D,

$$f_D' = f_D(\sigma) / \int_0^{\infty} f_D(\sigma) d\sigma$$

$f_D(\sigma)$ is the photon exitance of the donor at wavenumber σ , and $\varepsilon_A(\sigma)$ is the decadic molar absorption coefficient of A at wavenumber σ .

In the context of *Förster excitation transfer*, J is given by:

$$J = \int_0^{\infty} [f_D'(\sigma) \varepsilon_A(\sigma) / \sigma^4] d\sigma$$

In the context of *Dexter excitation transfer*, J is given by:

$$J = \int_0^{\infty} f_D(\sigma) \varepsilon_A(\sigma) d\sigma$$

In this case f_D and ε_A , the emission spectrum of donor and absorption spectrum of acceptor, respectively, are both normalized to unity, so that the rate constant for energy transfer, k_{ET} , is independent of the oscillator strength of both transitions (contrast to Förster mechanism).

See *energy transfer*.

1996, 68, 2275