**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, \( f'_D = \frac{f_D(\sigma)}{\int_0^\infty f_D(\sigma) d\sigma} \), \( f_D(\sigma) \) is the photon exitance of the donor at wavenumber \( \sigma \), and \( \varepsilon_A(\sigma) \) is the decadic molar absorption coefficient of A at wavenumber \( \sigma \). In the context of Förster excitation transfer, \( J \) is given by:

\[
J = \int_0^\infty \frac{f'_D(\sigma) \varepsilon_A(\sigma)}{\sigma^4} d\sigma
\]

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 \( \varepsilon_A \), 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

**Source:**
PAC, 1996, 68, 2223 (Glossary of terms used in photochemistry (IUPAC Recommendations 1996)) on page 2275