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photon fluence rate, $E_{p,o}$

Rate of photon fluence. Total number of photons (N_p) incident from all directions on a small sphere divided by the cross-sectional area of the sphere and per time interval. SI unit is $m^{-2}\ s^{-1}$. Same as photon spherical irradiance.

Notes:

1. Mathematical definition: $E_{p,o} = dN_p / (dt\ dS) = dH_{p,o} / dt$. If $E_{p,o}$ is constant over the time interval and the surface, $E_{p,o} = N_p / t\ S$ Equivalent definition: $E_{p,o} = \int_{4\pi} L_p d\Omega$ with L_p the photon radiance and Ω the solid angle of the beams passing through the given point on the surface.
2. It reduces to photon irradiance E_p for a parallel and normally incident beam not scattered or reflected by the target or its surroundings.
3. This quantity can be used on a chemical amount basis by dividing $E_{p,o}$ by the Avogadro constant, the symbol then being $E_{n,p,o}$, the name 'photon fluence rate, amount basis', SI unit is $mol\ m^{-2}\ s^{-1}$; common unit is einstein $m^{-2}\ s^{-1}$.

Source:

PAC, 2007, *79*, 293 *(Glossary of terms used in photochemistry, 3rd edition (IUPAC Recommendations 2006))* on page 395

