

downconversion

Process by which a photon with frequency ν_1 interacts with a non-linear medium and splits into two simultaneously emitted photons with frequencies ν_2 and ν_3 so that the energy is conserved:

$$\nu_1 = \nu_2 + \nu_3$$

Notes:

1. Also known as a parametric downconversion.
2. The efficiency of the conversion process depends on the parametric gain in the non-linear material. This in turn depends on the power of the incident radiation, the photon frequencies, their indices of refraction in the material, and the non-linear 'hyper-susceptibility' of the material.

Source:

PAC, 2007, 79, 293 (*Glossary of terms used in photochemistry, 3rd edition (IUPAC Recommendations 2006)*) on page 326