

Single Crystal and the Third Order non Lineare of the Adeninium Dinitrate

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We report the measurement of the degenerate fourth-wave mixing (DFWM) of adeninium dinitrate in aqueous solutions at $\lambda=532$ nm in ps regime with different numbers of π -conjugated bonds. From these measurements, we evaluated the values of the second order hyperpolarizabilities γ , which are about 10^3 larger than the γ value of CS₂. The influence of π -conjugated bonds on the third-order susceptibilities and appropriate figures of merits is discussed. The more important seems to be the possibility of a simultaneous increase of the third-order susceptibilities, together with the decrease of the absorption coefficients that open a possibility of their use as promising materials for laser wavelengths mixing.

In the asymmetric unit of the title compound, C₅H₇N₅²⁺, 2NO₃, the adenine base is diprotonated and cocrystallizes with two nitrate anions. The structure is a layered one, and in each layer all H atoms bonded to O and N atoms are involved in a twodimensional hydrogen-bonding network. Short contacts are observed between parallel layers and ensure the cohesion of the crystals.

Keywords: hydrogen bonding, degenerate four wave mixing, third-order susceptibilities