

# On the Minimum Quantum Requirement of Photosynthesis

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Z. Naturforsch. **64c**, 673–679 (2009); received May 11/June 29, 2009

An analysis of the shape of photosynthetic light curves is presented and the existence of the initial non-linear part is shown as a consequence of the operation of the non-cooperative (Kok's) mechanism of oxygen evolution or the effect of dark respiration. The effect of non-linearity on the quantum efficiency (yield) and quantum requirement is reconsidered. The essential conclusions are: 1) The non-linearity of the light curves cannot be compensated using suspensions of algae or chloroplasts with high ( $>1.0$ ) optical density or absorbance. 2) The values of the maxima of the quantum efficiency curves or the values of the minima of the quantum requirement curves cannot be used for estimation of the exact value of the maximum quantum efficiency and the minimum quantum requirement. The estimation of the maximum quantum efficiency or the minimum quantum requirement should be performed only after extrapolation of the linear part at higher light intensities of the quantum requirement curves to "0" light intensity.

*Key words:* Photosynthetic Light Curves, Quantum Efficiency or Quantum Yield of Photosynthesis, Quantum Requirement of Photosynthesis