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Extinction spectra of the membrane-bound chromoprotein show that at 0° C and pH 7.0 the system is stable and photoreversible for several days. The maximum of the extinction spectrum of ASTACUS rhodopsin (0° C, pH 7) is $\lambda_{\text{max}} = 530 \text{ nm}$. Rhodopsin (R) is isomerized nearly quantitatively to metarhodopsin (M) ($\lambda_{\text{max}} = 500 \text{ nm}$) by irradiation at $\lambda = 630\text{--}640 \text{ nm}$.

$$R \begin{array}{c} \xrightarrow{\quad} M' \\ \xleftarrow{\quad} R' \end{array} \begin{array}{c} \xrightarrow{\quad} M \\ \xleftarrow{\quad} M' \end{array}$$

The activation energies were calculated from the slope of the Arrhenius plot and seem to be the same for both reactions, $\Delta E_{M' \rightarrow M} = \Delta E_{R' \rightarrow R} = 22.5$ kcal mol⁻¹.

Flash-spectroscopic measurements in the wavelength range from 430 to 650 nm show that the difference spectra of M-R' and M-R have the same maximum at 495 nm and the same minimum at 575 nm. This suggests that the absorption maxima of R and R' are similar, but differ in the molar extinction coefficient.

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