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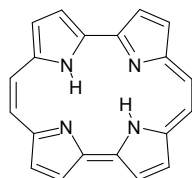
## Excited state energy degradation paths in the case of porphycene and dibenzoporphycene isolated in low temperature matrices

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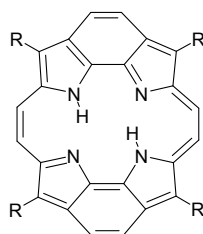
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Picosecond time-resolved spectroscopy in emission and absorption was used to study excited state deactivation processes of porphycene and dibenzoporphycene incorporated in solid argon and nitrogen matrices as well as embedded in rigid methyltetrahydrofuran (MTHF).



**Porphycene**



R = CH<sub>3</sub>, C(CH<sub>3</sub>)<sub>3</sub>

**Dibenzoporphycene**

For the matrix-isolated porphycene, excitation into the Soret band, located about 11000 cm<sup>-1</sup> above the lowest singlet state, results in major spectral evolution of the time-resolved fluorescence (TRF) as well as transient absorption (TA) spectra on the time scale 100 ps. No such evolution is detected for excitation into the Q band.

In the case of dibenzoporphycene, when the molecule is excited into the Soret band, the relaxation to S<sub>1</sub> is faster than the temporal resolution of the apparatus (2.5 ps). The depopulation of the S<sub>1</sub> occurs in 10-20 ps, leading directly to S<sub>0</sub>.