

Construction of photovoltaic cells based on *Rhodobacter sphaeroides* reaction centers

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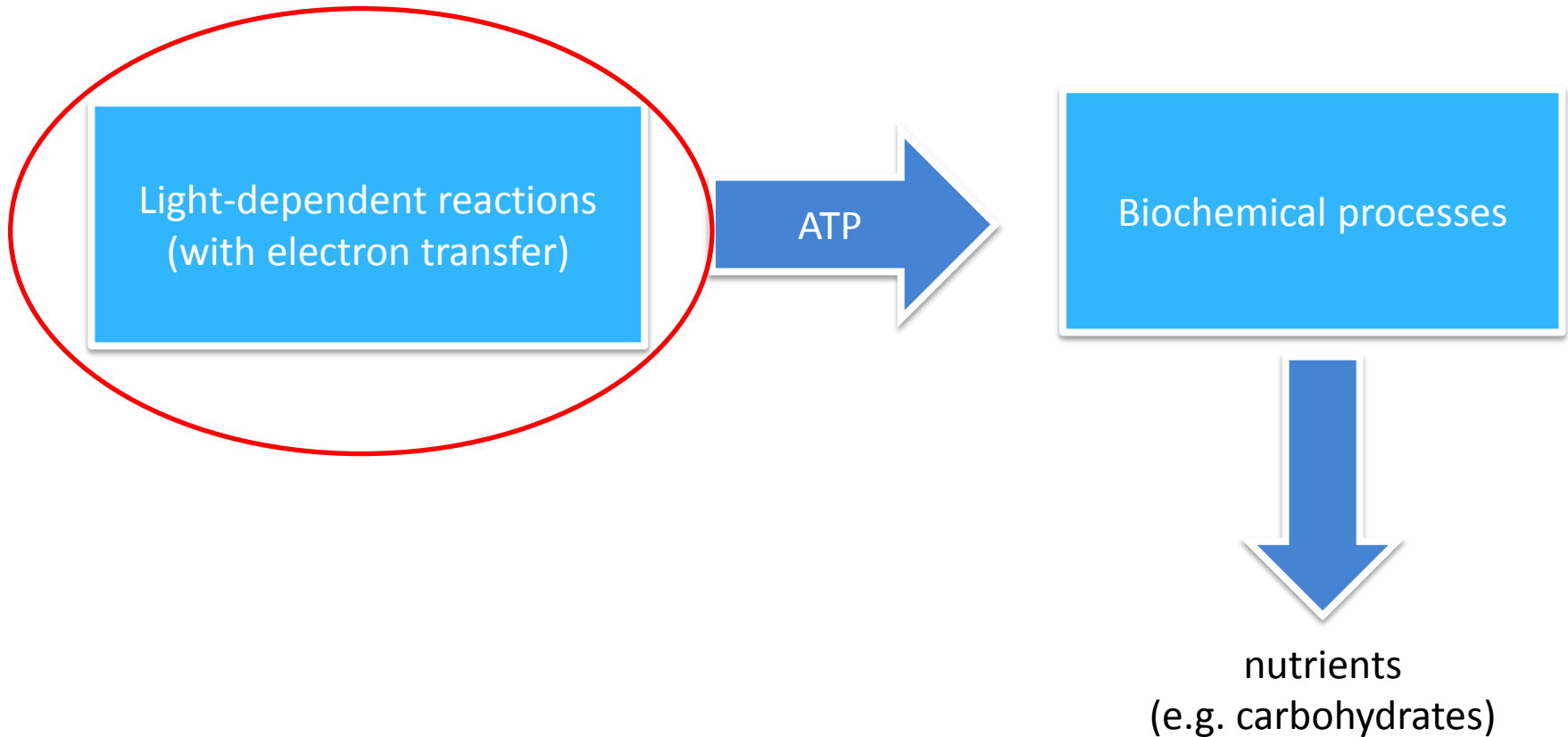
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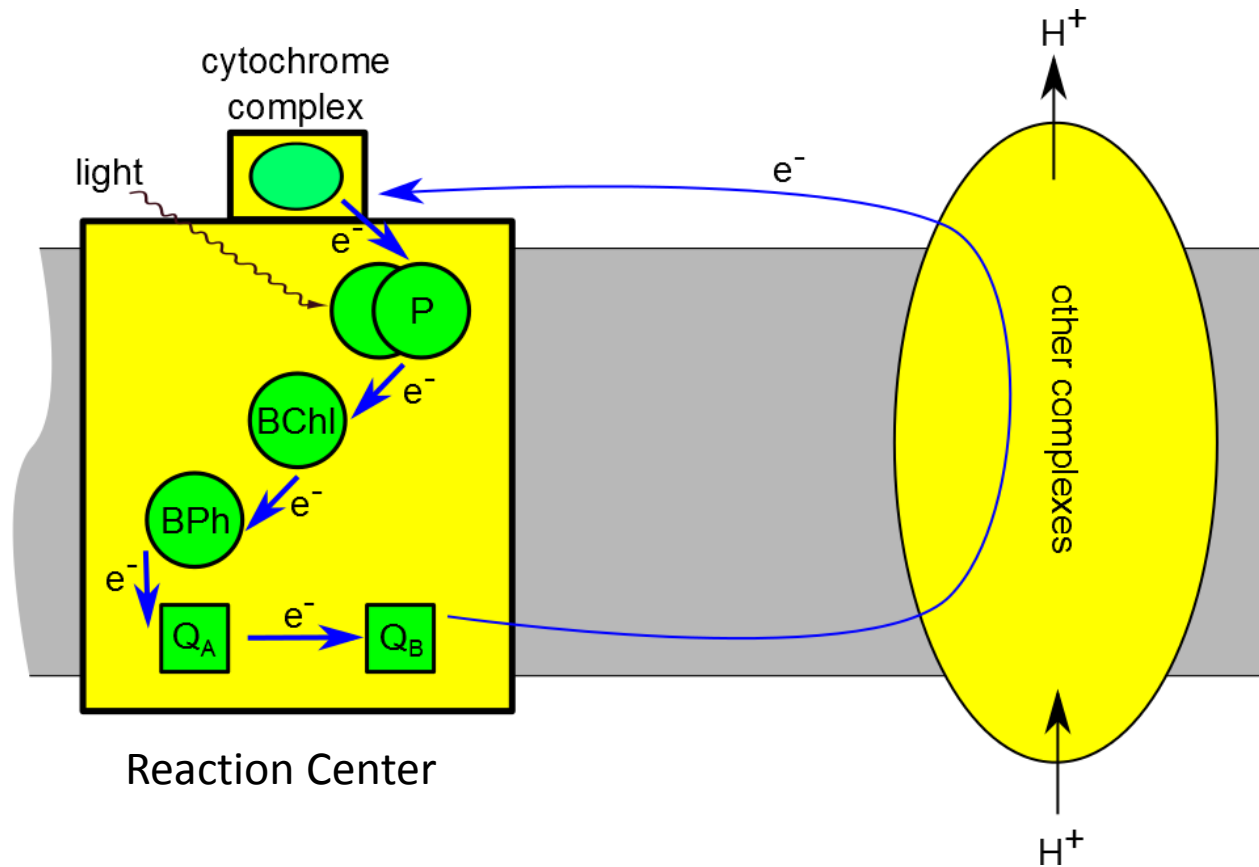
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Bacterial photosynthesis

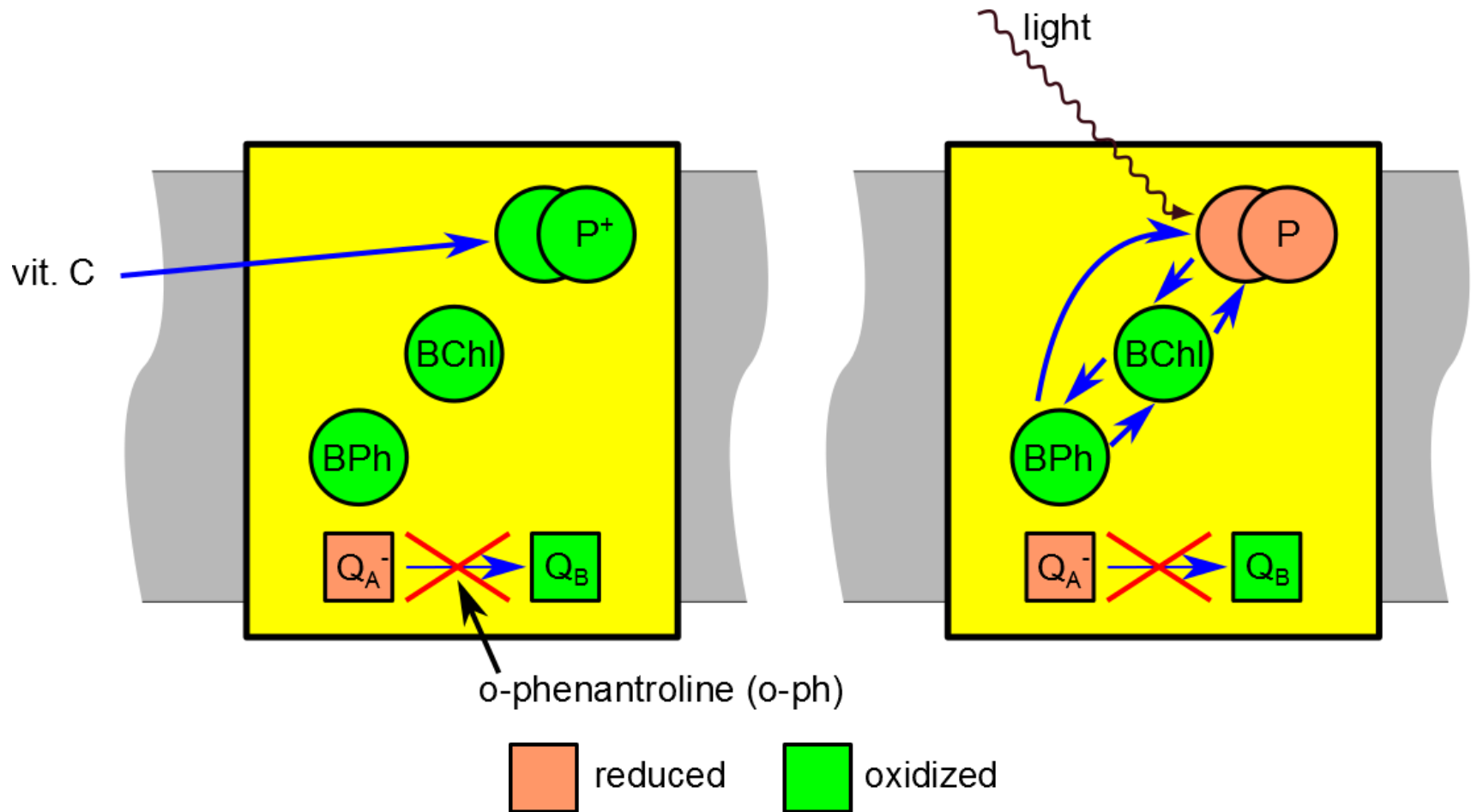


Electron transfer in *Rba. sphaeroides* RC



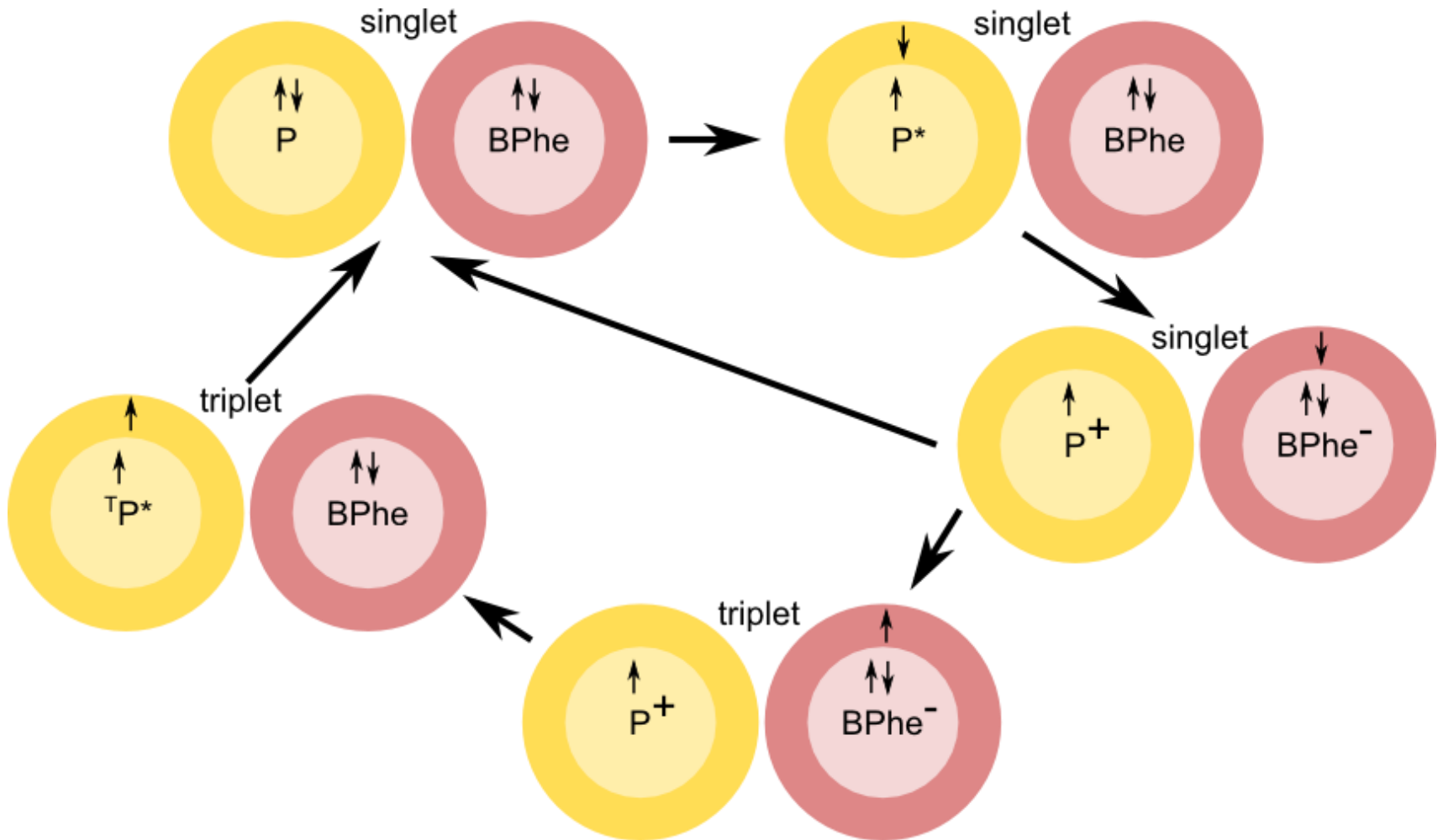
Source: Own elaboration

Chemical modification



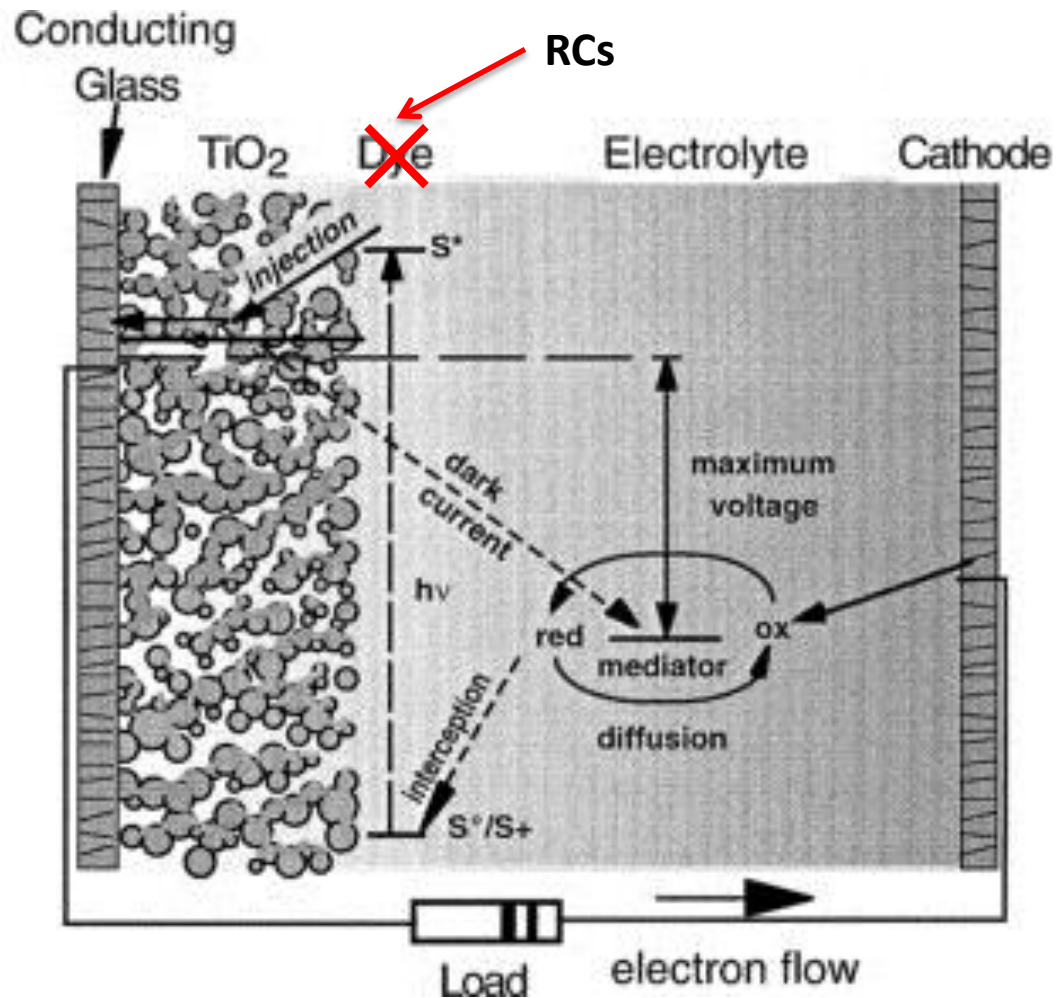
Source: Own elaboration

Triplet state formation



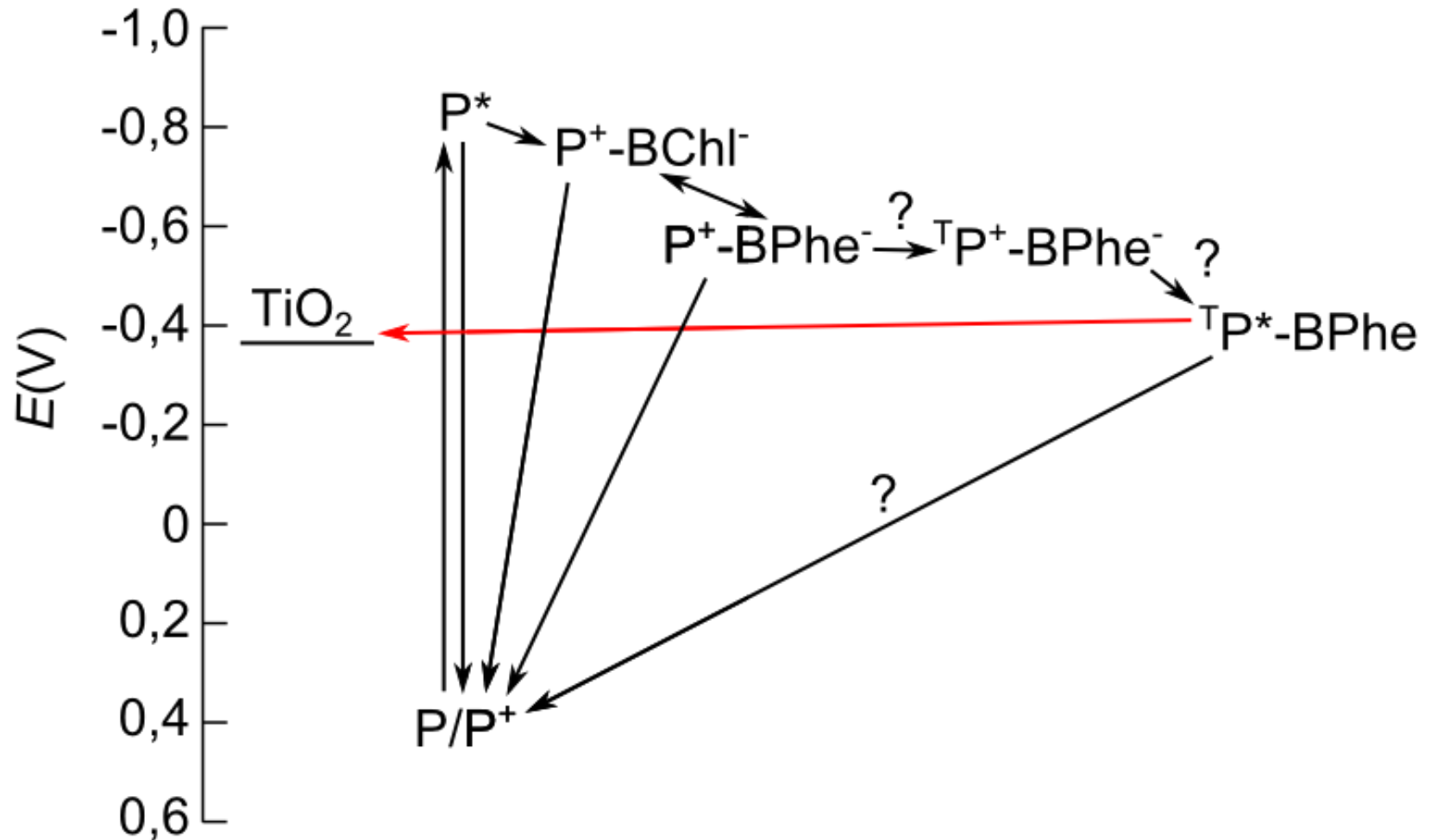
Source: *Own elaboration*

Grätzel solar cell



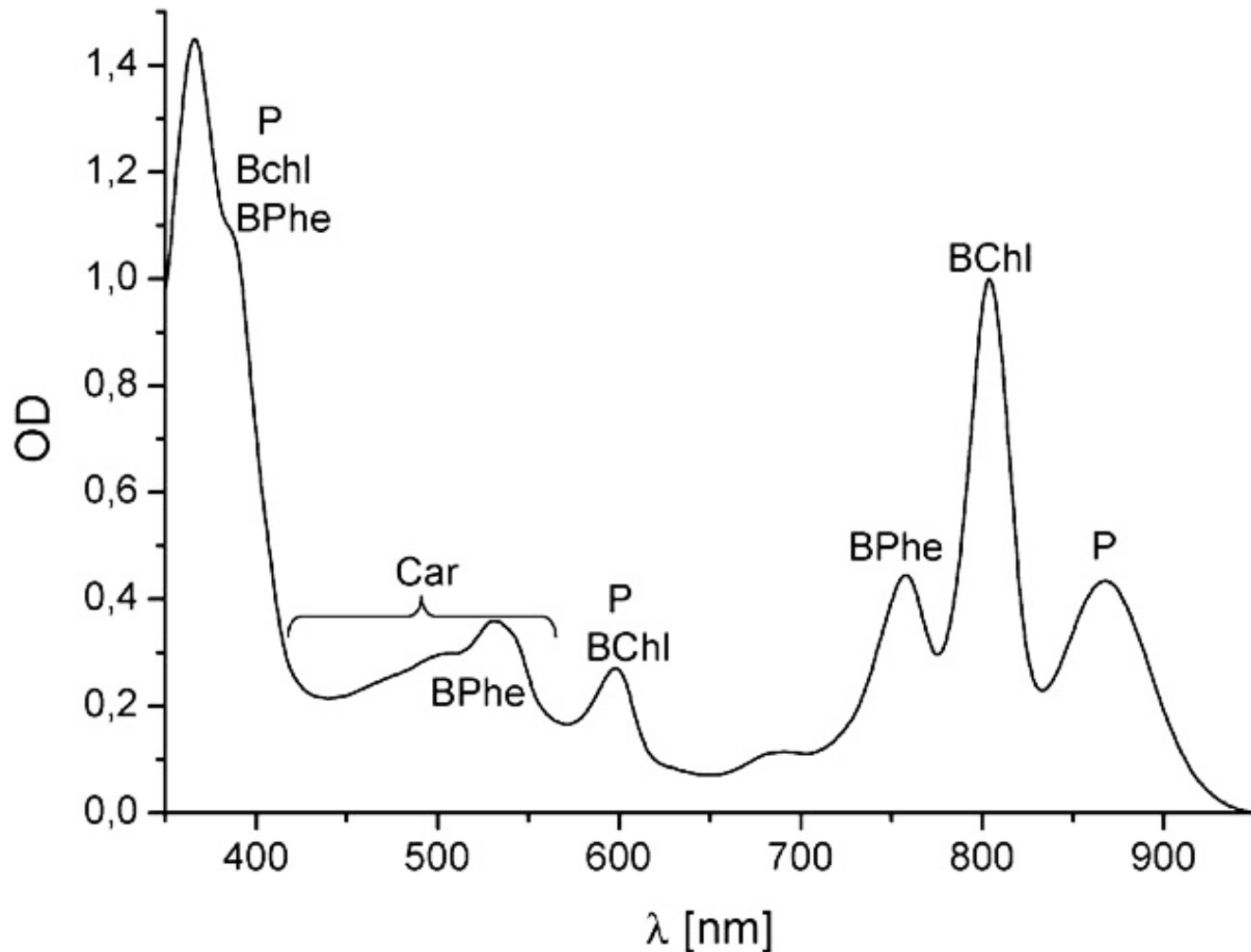
Source: Grätzel M. (1999)

Lukashev mechanism



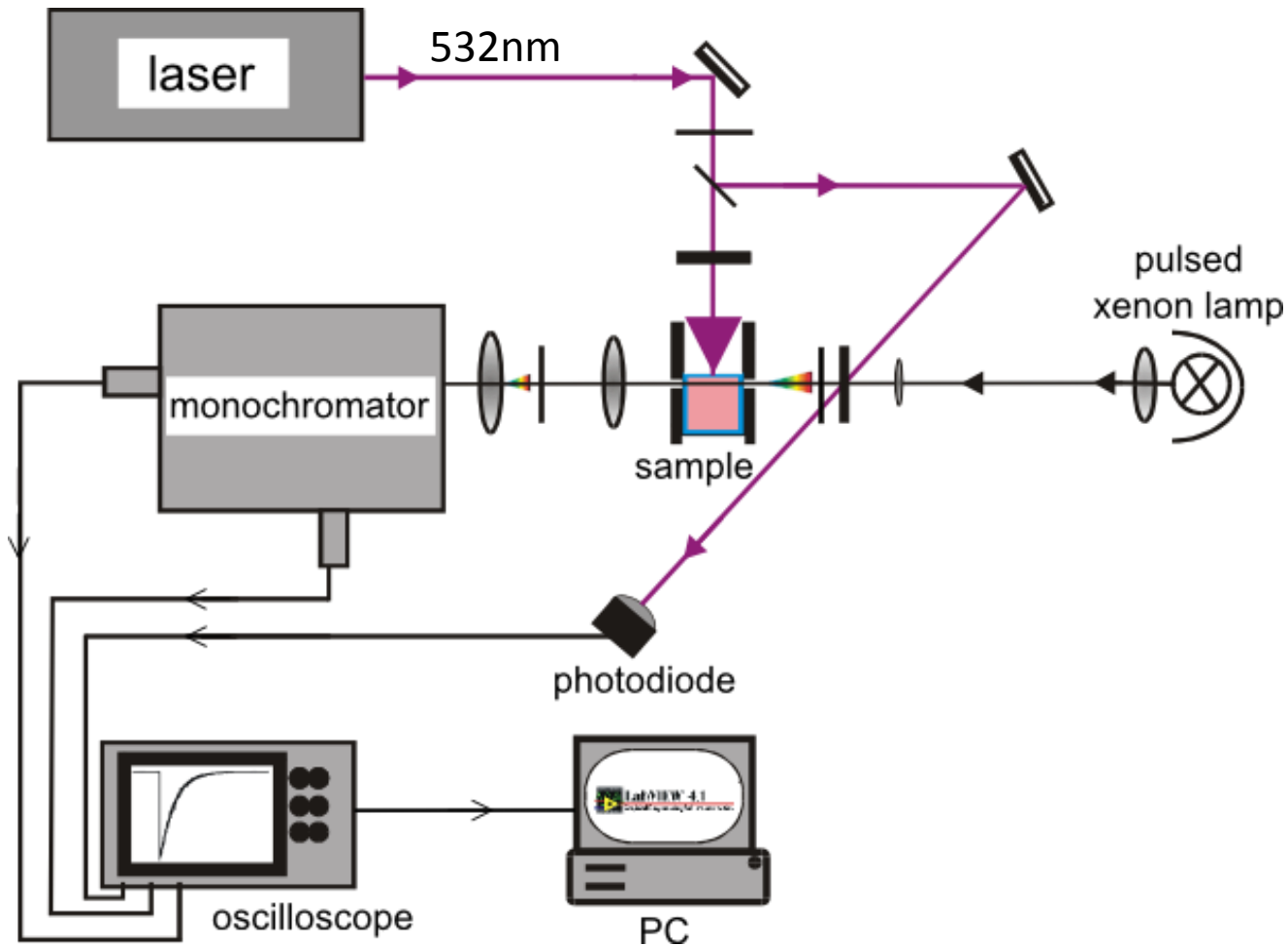
Source: Own elaboration based on Lukashev E. P. et al. (2007) and Gibasiewicz K. et al. (2008)

Stationary absorption spectrum



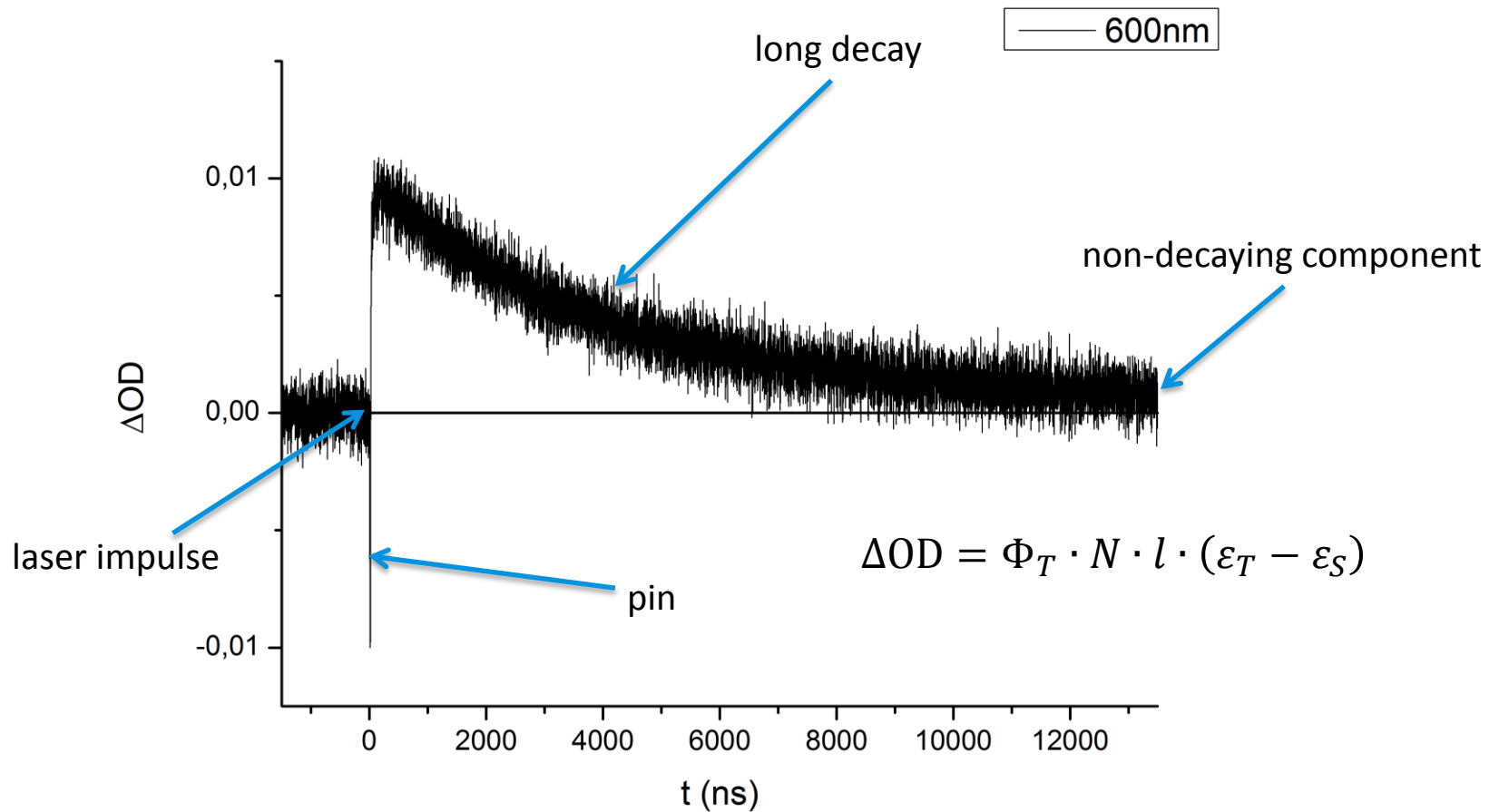
Source: *Gibasiewicz K. et al. (2009)*

Transient absorption spectrometer



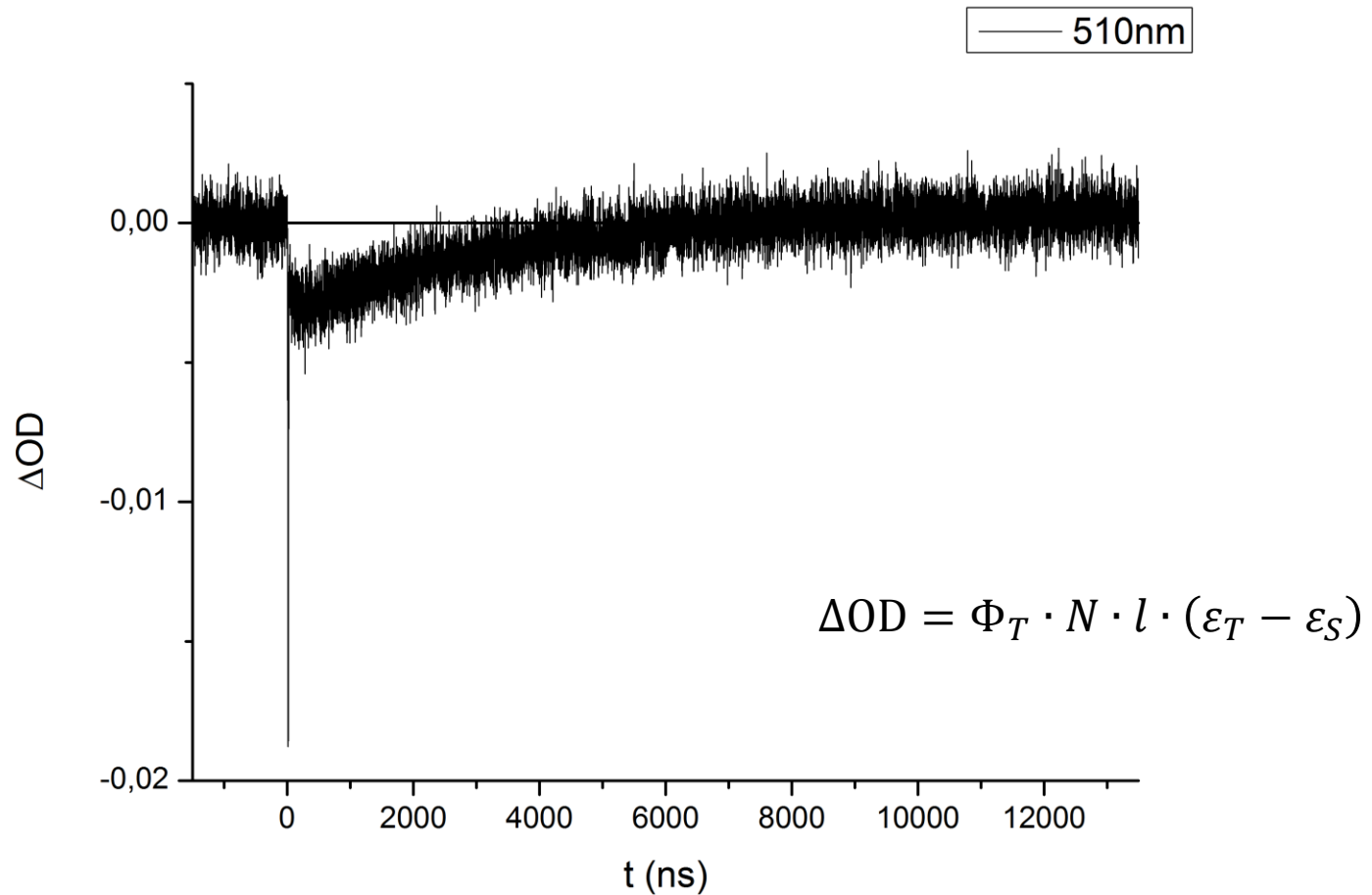
Source: Own elaboration based on Burdziński G. PhD thesis (2003)

Sample kinetics



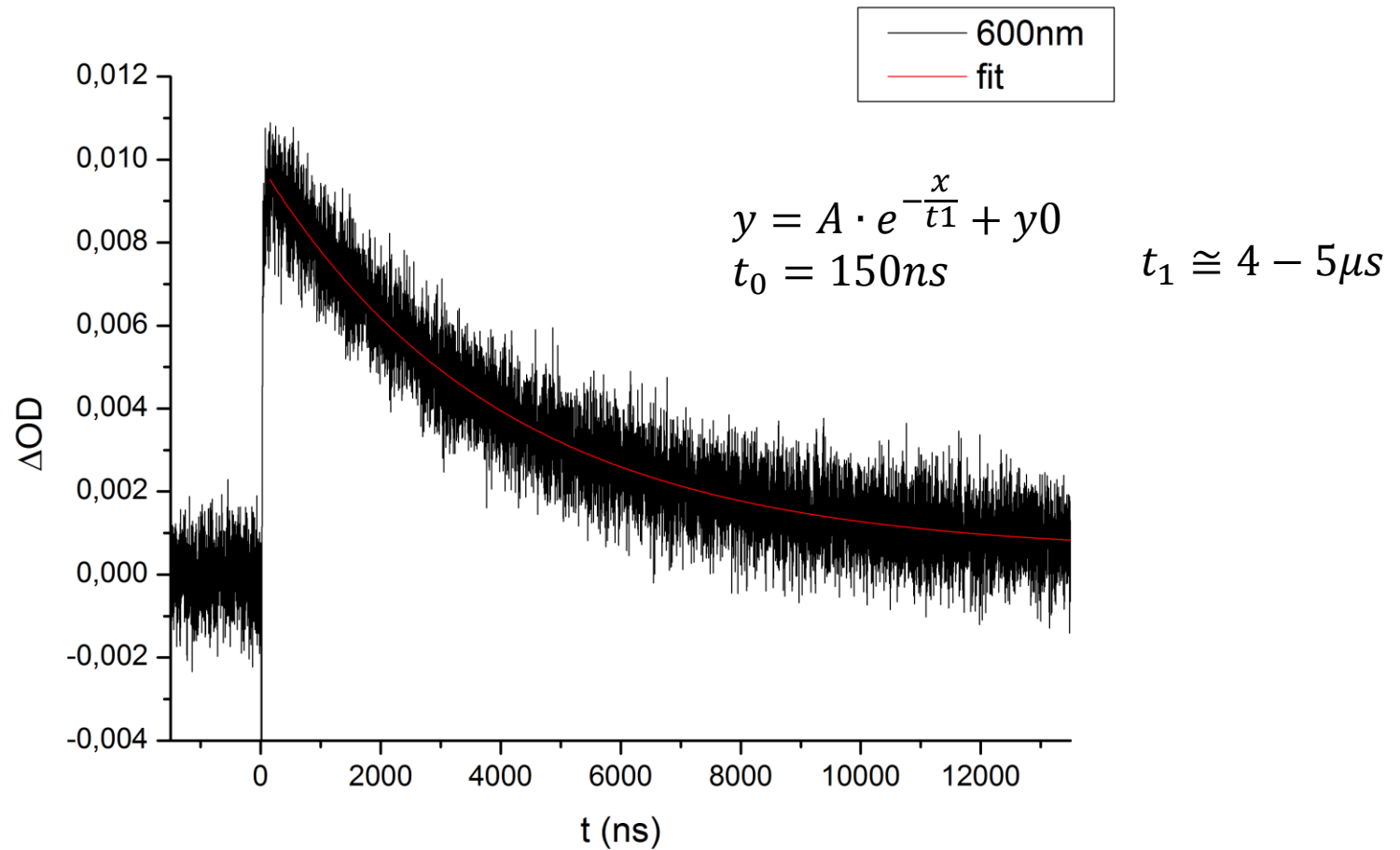
Source: *Own data*

Sample kinetics



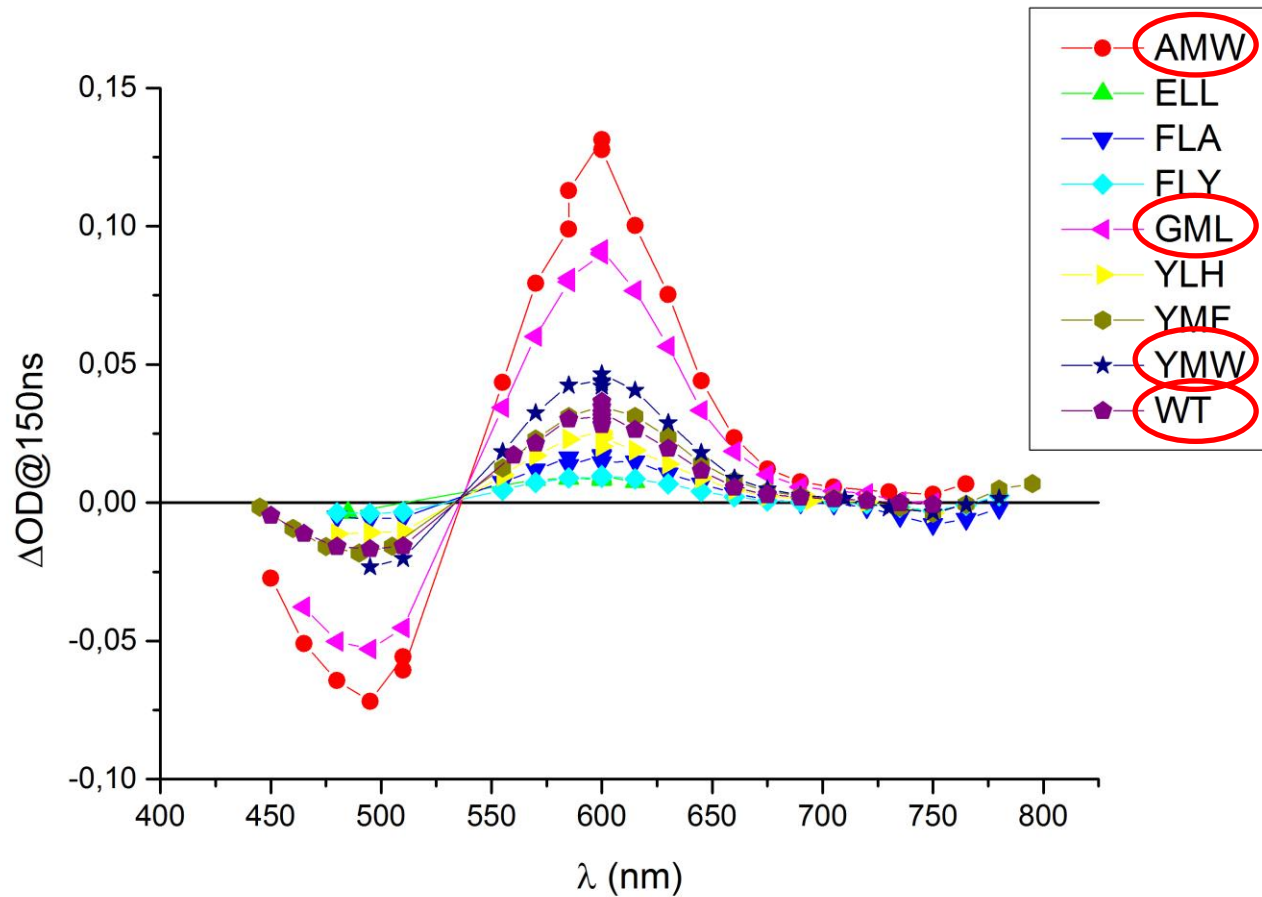
Source: *Own data*

Monoexponential fit



Source: *Own data*

Light minus dark spectra



Source: Own data

First conclusions and plans

- Triplet minus singlet spectra of all samples have similar shape.
- Time constants of decay are in close agreement with literature data.
- The quick pin makes it impossible to analyse quick parts of the decay.
- Mutants for constructing photovoltaic cells were chosen.
- Isolated RCs of chosen mutants are prepared.
- First photovoltaic cell will be produced in few weeks.

Acknowledgements

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Thank you for your attention

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