

Primary Events in Photosynthetic Reaction Centers and Antennas:

**A Femtosecond Visible – Pump – Mid-Infrared
– Probe Study**

Natalia Paulina Pawłowicz

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This thesis has been reviewed and approved by the following committee:

Prof. Dr. Andrzej Dobek, Adam Mickiewicz University, Poznań, Poland

Dr. Jacques Breton, CEA-Saclay, France

Dr. Bruno Robert, CEA-Saclay, France

Dr. Su Lin, Arizona State University, Tempe, USA

Dr. Ivo H. M. van Stokkum, Vrije Universiteit Amsterdam, The Netherlands

Dr. Michael R. Jones, University of Bristol, UK

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– Pump – Mid-Infrared – Probe Study**

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To my daughter Karolina

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Abbreviations:

BChl	Bacteriochlorophyll
BPhe	Bacteriopheophytin
Chl	Chlorophyll
Pheo	Pheophytin
Car	carotenoid
fs	femtosecond
ps	picosecond
fwhm	full width at half maximum
RT	Room Temperature
EADS	Evolution Associated Difference Spectrum
SADS	Species Associated Difference Spectrum
OD	Optical Density
ESA	Excited State Absorption
CS	Charge Separation
QY	Quantum Yield
LH2	Light Harvesting complex 2 of photosynthetic purple bacteria
LHCII	Light Harvesting complex II of plants
<i>Rb.</i>	Rhodobacter
<i>Rps.</i>	Rhodopseudomonas
WT	Wild Type
RC	Reaction Center
PSII	Photosystem II

Cofactors in the bacterial reaction center

P	bacteriochlorophyll dimer present in the RC
B _L	monomeric bacteriochlorophyll present in the active branch
B _M	monomeric bacteriochlorophyll present in the inactive branch
H _L	bacteriopheophytin present in the active branch
H _M	bacteriopheophytin present in the inactive branch
Q _A	quinone present in the active branch
Q _B	quinone present in the inactive branch

Cofactors in the Photosystem II reaction center

P _{D1}	Chlorophyll P680 in the active branch, secondary electron donor
P _{D2}	Chlorophyll P670 in the inactive branch
Chl _{D1}	Chlorophyll present in the active branch, primary electron donor
Chl _{D2}	Chlorophyll present in the inactive branch
Pheo _{D1}	Pheophytin present in the active branch, primary electron acceptor
Pheo _{D2}	Pheophytin present in the inactive branch
Chlz _{D1}	Accessory chlorophyll present in the active branch
Chlz _{D2}	Accessory chlorophyll present in the inactive branch
Q _A	Quinone present in the active branch
Q _B	Quinone present in the inactive branch