Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.


**Supplementary material**

Membrane samples, such as the Δ*puf* or the wild type membranes used in this experiment may in general be affected by sample turbidity, differently from the isolated complexes. The sample turbidity scatters the light and too much scattering may affect the time resolved fluorescence dynamic when the measurement is performed with a streak camera. However the sample turbidity does not affect the dynamic measured via transient absorption, where the signal originate only from the section of sample where there is a strong overlap between pump and probe, which correspond to the non-scattered part of the laser beam. The fact that the transient absorption results of global analysis reproduce the results of time resolved fluorescence is a proof that the turbidity of the sample does not affect the results shown in this paper. However to show that the turbidity does not affect either the steady state absorption, an absorption spectrum starting at 220 nm is shown in the following figure. It is clear from the baseline that the effect of the scattering is minimum even in the UV region where this effect is maximum. The peak appearing at 260/280 nm in the membranes samples (Δ*puf* and wild type) is due to the presence of some residual ribosomes and it is not relevant either for photosynthesis or for the analysis applied in this paper which is focus about the near-IR dynamic.

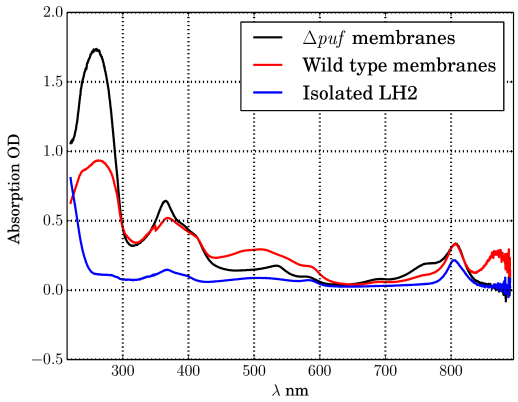


*Fig 1:* Steady state absorption of isolated LH2 (blue), LH2-only membranes or Δ*puf* membranes (black) and wild type membranes (red) at room temperature.