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Functional Plant Biology

Supplementary Material

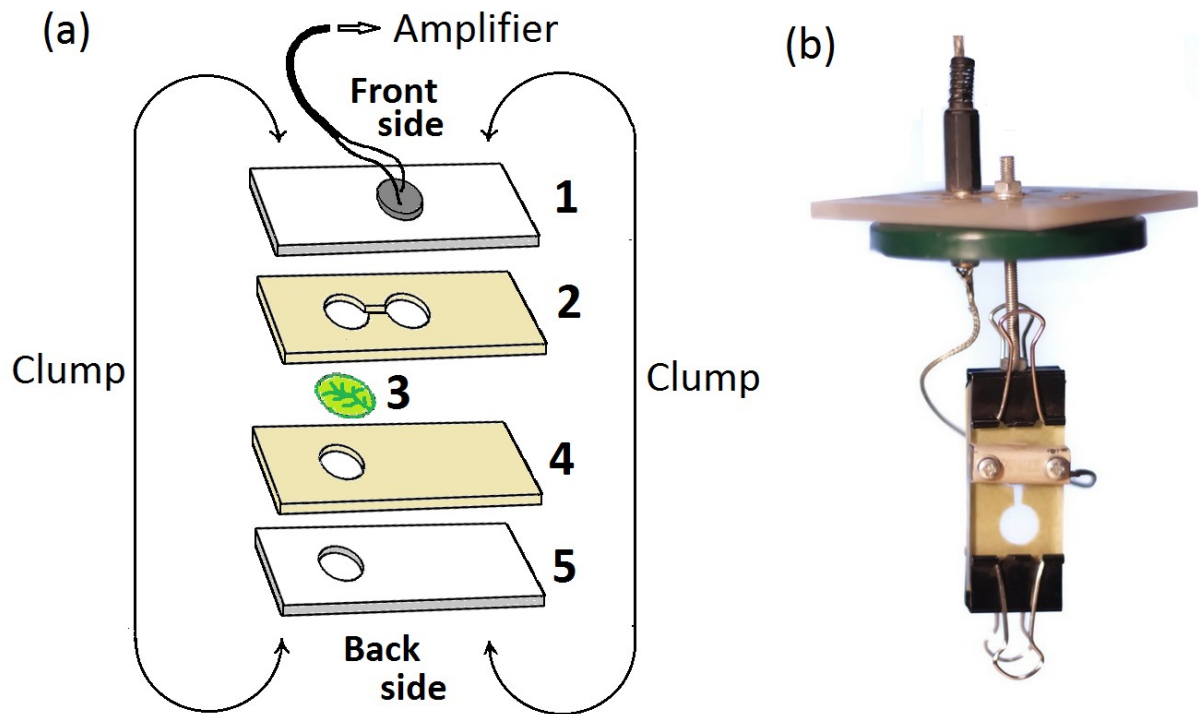
High levels of anoxygenic photosynthesis revealed by dual-frequency Fourier photoacoustics in *Ailanthus altissima* leaves

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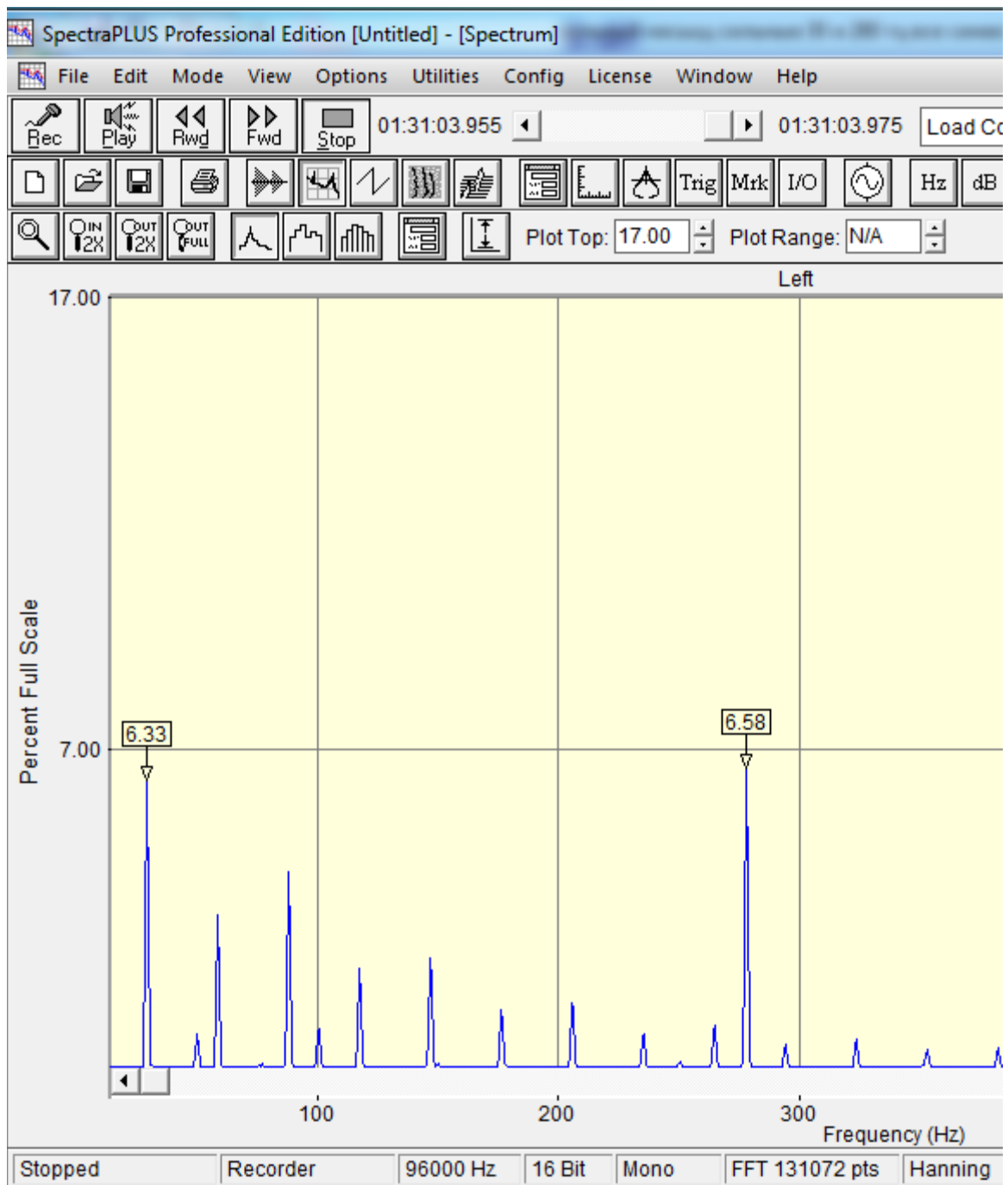
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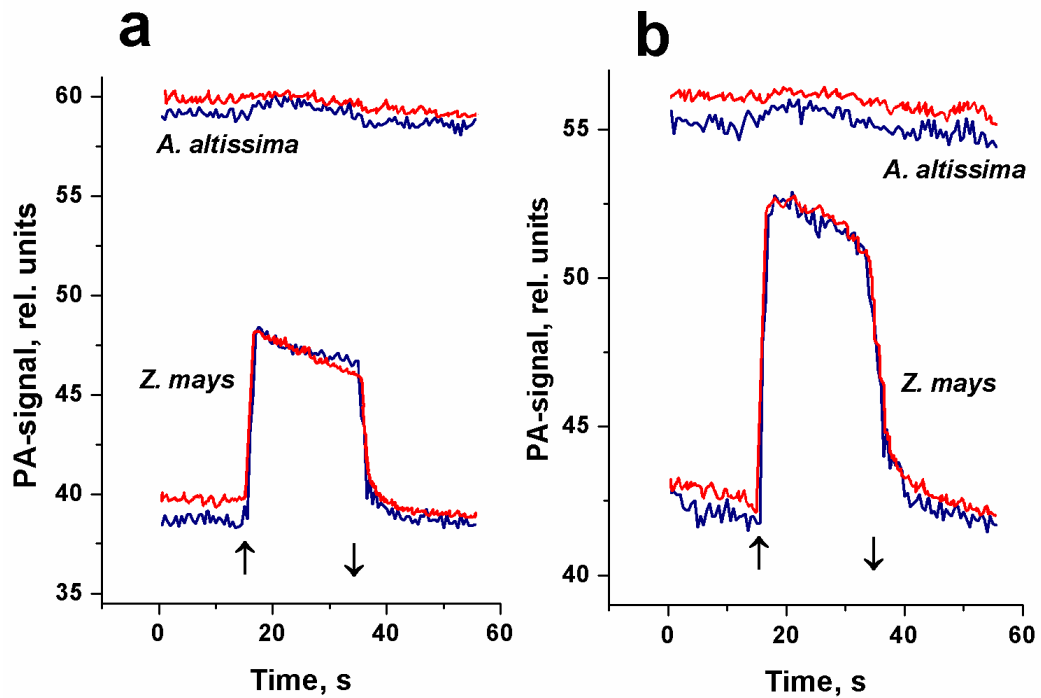
Supplementary material



Supplementary Fig. S1 Photoacoustic cell. Schematic representation (a) and appearance (b). 1 – Glass plate with a microphone; 2 – Silicone rubber plate with two holes communicating through a slot; 3 – Leaf cutting; 4 – Silicone rubber plate with a hole; 5 – Glass plate with a hole. Measuring, actinic and saturating lights may be directed to the front side (as it has been made in the present study) or to the back side. The plate pack is mounted below a cap which is screwed onto a 500 ml vessel (not shown). Abaxial side of the leaf cutting communicates with the 500 ml air space of the vessel through the hole in the plate 5, and adaxial side communicates with the photoacoustic chamber formed by plates 1 and 2.



Supplementary Fig. S2 Real time Fourier spectrum of photoacoustic signal simultaneously excited by 20 and 280 Hz pulsed light. Screen of the SpectraPlus main application window. Downward marker arrows point the signal peaks of the selected frequencies at the spectrum. Other peaks relate to the harmonics.



Supplementary Fig. S3 Photoacoustic detection of CET-PSI activity in *Ailanthus altissima* and *Zea mays* leaves (**a**) after adaptation under low non-modulated red light ($\lambda=640\text{ nm}$, $10\ \mu\text{mol photons m}^{-2}\text{ s}^{-1}$) and (**b**) after adaptation under moderate non-modulated red light ($\lambda=640\text{ nm}$, $120\ \mu\text{mol photons m}^{-2}\text{ s}^{-1}$). Red line indicates plants light-adapted for 5 min and blue line indicates plants light-adapted for 30 min. Immediately after the non-modulated red light was switched off, the measuring far-red light ($\lambda=715\text{ nm}$, $20\ \mu\text{mol photons m}^{-2}\text{ s}^{-1}$) was switched on ($t=0$ point of the time scale). Downward- and upward-pointing arrows, respectively, show switching the saturating far-red light ($\lambda=715\text{ nm}$, $1200\ \mu\text{mol photons m}^{-2}\text{ s}^{-1}$) on and off. Note, that *A. altissima* is a C3-plant, and *Z. mays* is a C4-plant.