



### Figure 3. ECS light-response curves

**(A)** Initial (*I*) and steady-state (*J*) electron fluxes plotted against light intensity. *I* is fitted to a straight-line, *J* to a Michaelis-Menten model, with  $V_{\max} = 88 \text{ e}^{-}.\text{PS}^{-1}.\text{s}^{-1}$  and  $K_M = 106 \text{ e}^{-}.\text{PS}^{-1}.\text{s}^{-1}$  (solid line). The inset shows an expanded view at low-light conditions. The dashed line is when forcing  $K_M = V_{\max}$  in the fit.

**(B)** Plot of the transmission coefficient  $J/I$  against the fraction of open photosystems  $\text{PS}_0$ . The solid line corresponds to a diffusive model with intrinsic losses, considering charge recombination at a rate  $k_{\text{rec}} = 350 \text{ s}^{-1}$ . The dashed line simulates the same diffusive model with maximum efficiency at low light ( $K_M = V_{\max}$ , *i.e.* same initial slope for *I* and *J*, see (D) inset). The dotted diagonal corresponds to an "ideal" photosynthetic apparatus with perfect transmission (for  $k_{\text{rec}} = 0$ ).

In (A), (B) and Figure 1B, open symbols represent the same dataset (obtained at  $140 \mu\text{mol}_{\text{photons}}.\text{m}^{-2}.\text{s}^{-1}$ ).