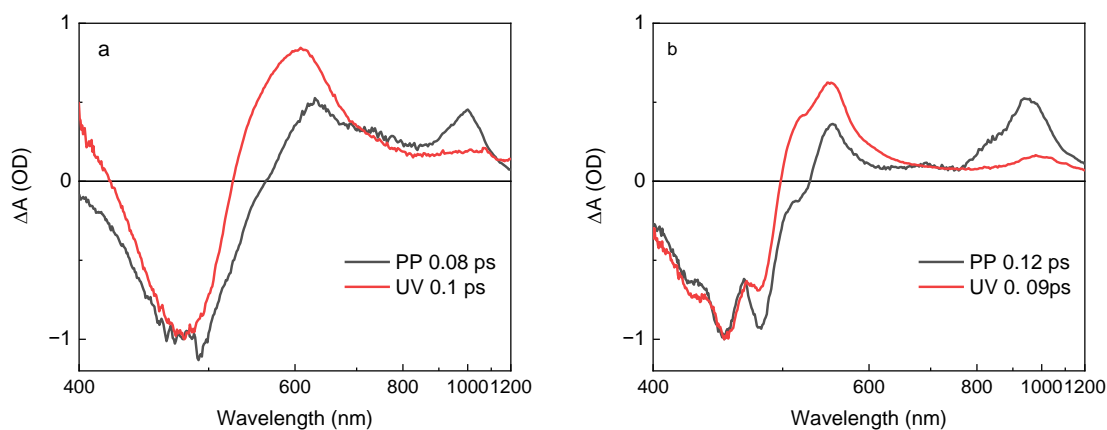
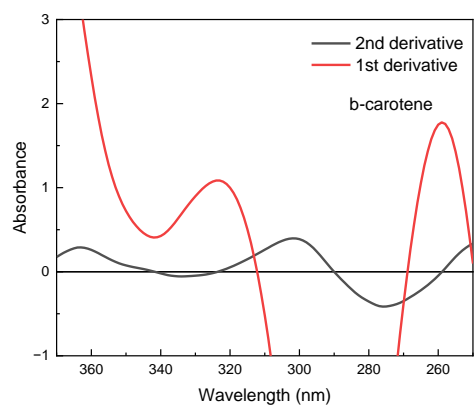
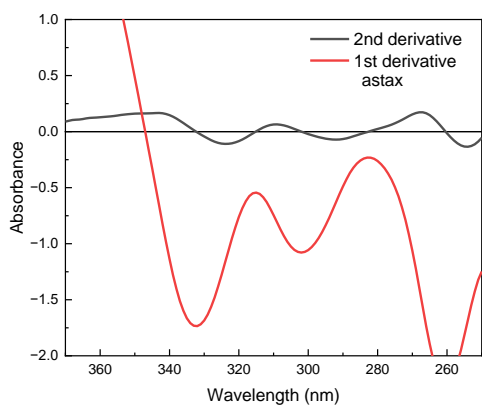


**Figure S1.** The S1 decay after PP and UV excitation for astaxanthin in methanol (a) and beta-carotene in n-hexane (b).



**Figure S2.** Transient absorption spectra of astaxanthin in methanol (a) and beta-carotene in hexane (b) measured at early times after direct S<sub>2</sub> excitation and after UV excitation taken for the maximum of S<sub>2</sub>-S<sub>N</sub> signal.



**Figure S3.** Smoothed first and second derivatives of absorption spectra of astaxanthin in methanol (a) and bcarotene in hexane (b).