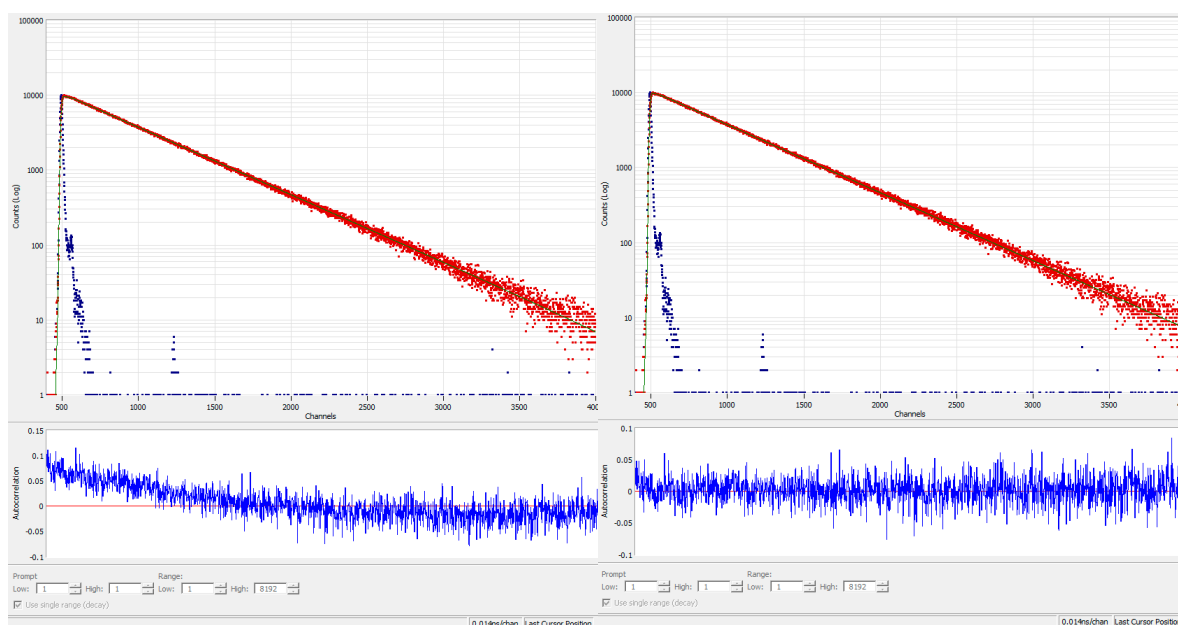
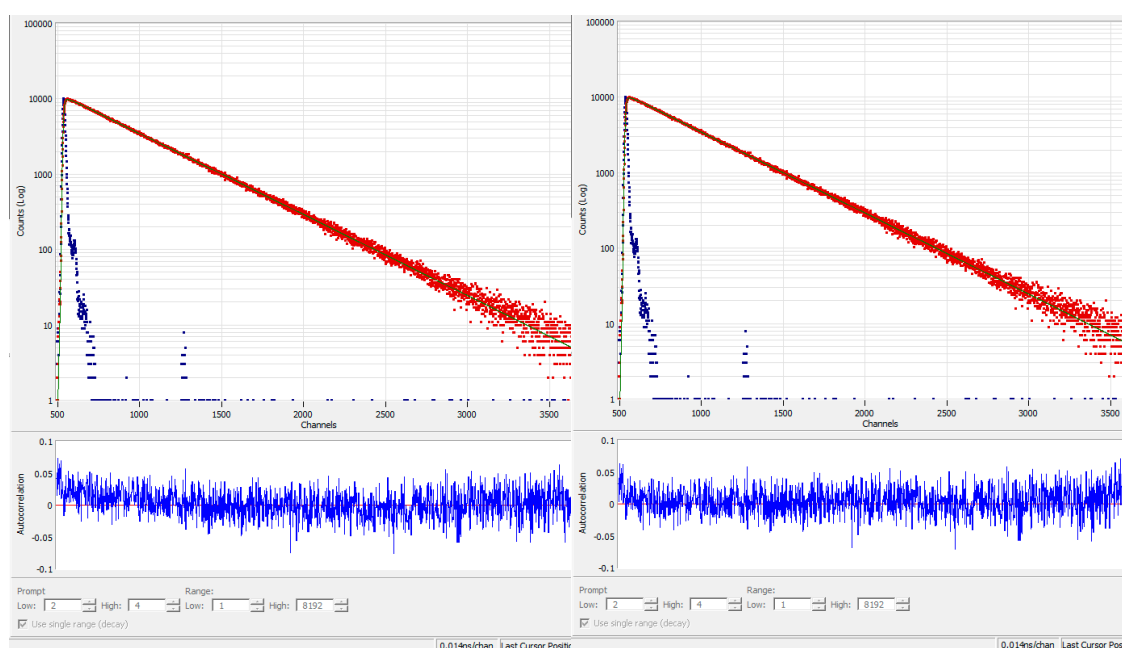


# Supplementary Material: Dissolution of Trihexyltetradecylphosphonium Chloride in Supercritical CO<sub>2</sub>

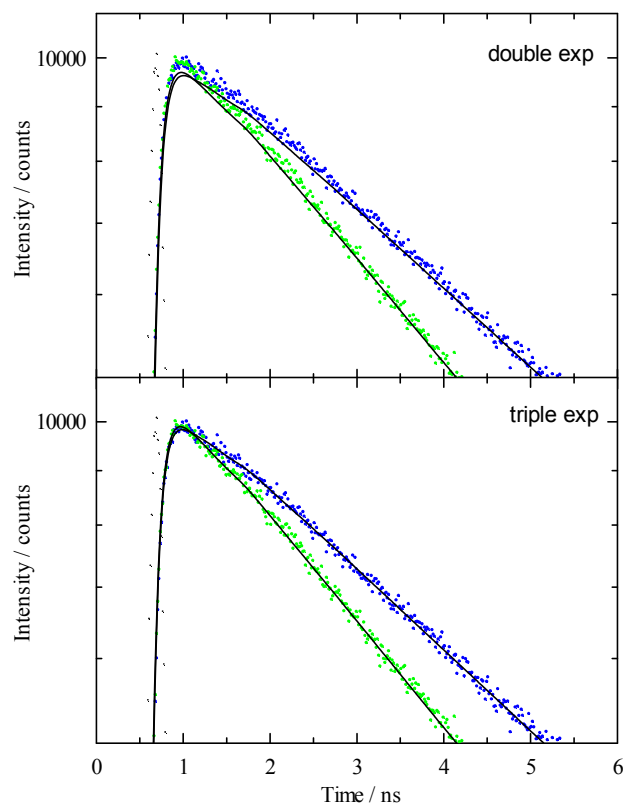
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**Figure S1.** Single (left) and double (right) exponential autocorrelation data for C153/scCO<sub>2</sub> intensity decay data at  $Q_r = 0.575$ . The autocorrelation of the residuals shows clear improvement for the double exponential decay model as it eliminates bias from the initial part of the decay.



**Figure S2.** Double (left) and triple (right) exponential autocorrelation data for C153/IL/scCO<sub>2</sub> intensity decay data at  $Q_r = 0.754$ . The autocorrelation of the residuals shows clear improvement for the double exponential decay model as it eliminates bias from the initial part of the decay.



**Figure S3.** Insets to Figure 6 for C153/IL/scCO<sub>2</sub>. Blue and green dots are fluorescence intensity decay data and solid lines are the fits for C153 in [P<sub>6,6,6,14</sub>]<sup>+</sup>Cl<sup>-</sup>/scCO<sub>2</sub> at 323 K. Excitation was at 405 nm and emission at 450 nm for all traces. Blue traces were recorded at  $\rho_r = 0.754$  and green traces were at  $\rho_r = 1.726$ . Black dots at short time show the instrument function. Top panel: fits to a double exponential decay model for these data. Bottom panel: fits to a triple exponential model for these data.



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