

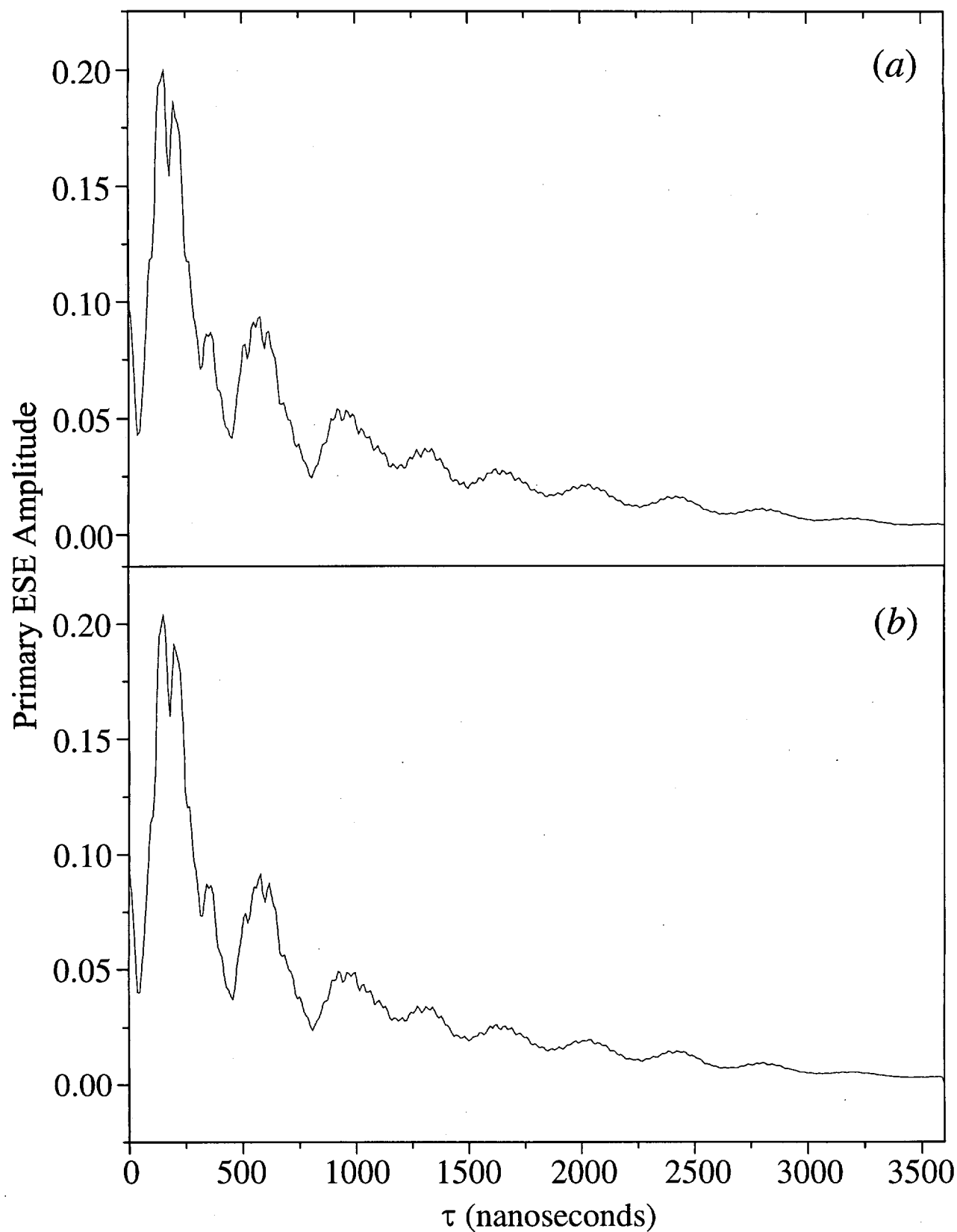


Figure S1. Primary ESEEMs for *cis,trans*-(L- N_2S_2)Mo^VO(SCH₂Ph) (a), *cis,trans*-(L- N_2S_2)Mo^VO(SCD₂Ph) (b). Acquisition conditions: $T = 20$ K; $\nu_o = 8.904$ GHz; $B_o = 3200$ G.

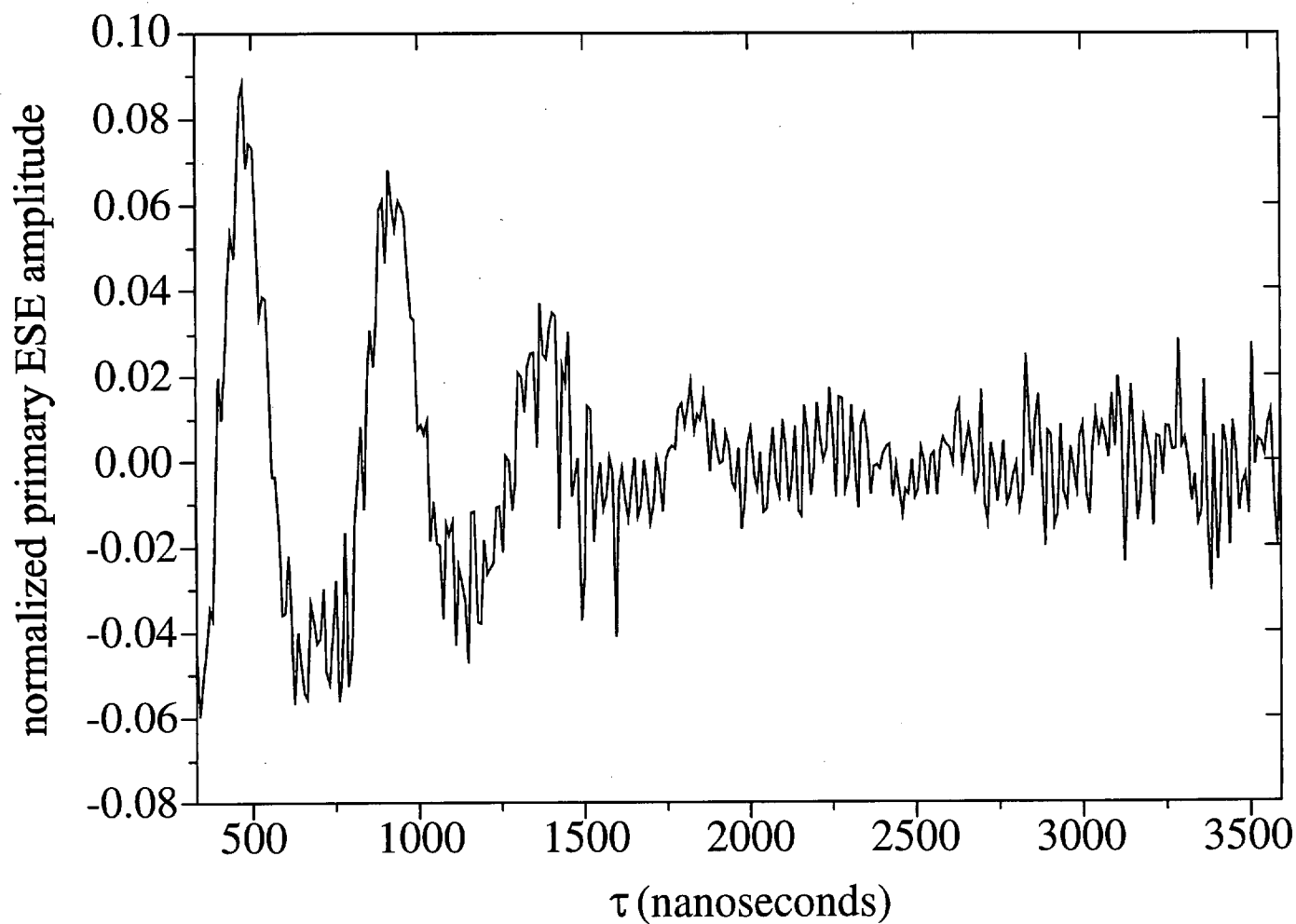


Figure S2. Primary ESEEM resulting from division of primary ESEEM trace of **1H** by primary ESEEM trace of **1D**, normalization of the resulting ESEEM by the non-oscillating background, and subtraction of this background. Experimental conditions: $T = 20$ K; $\nu_o = 8.904$ GHz; $B_o = 3200$ G.