

Figure S1. Conceptual images of uniform and localized distribution of molecules in a certain volume. (A) Twelve $\cdot\text{OH}$ were uniformly distributed in a 1000-nm³ volume. (B) Twelve $\cdot\text{OH}$ were localized on a linear beam track. The concentration of $\cdot\text{OH}$ in both A and B is 20 mM. The linear-density, which is defined as the number of molecules aligned on the linear unit of distance, is the reciprocal of the inter-molecular distance of the subjected molecules at a certain concentration.

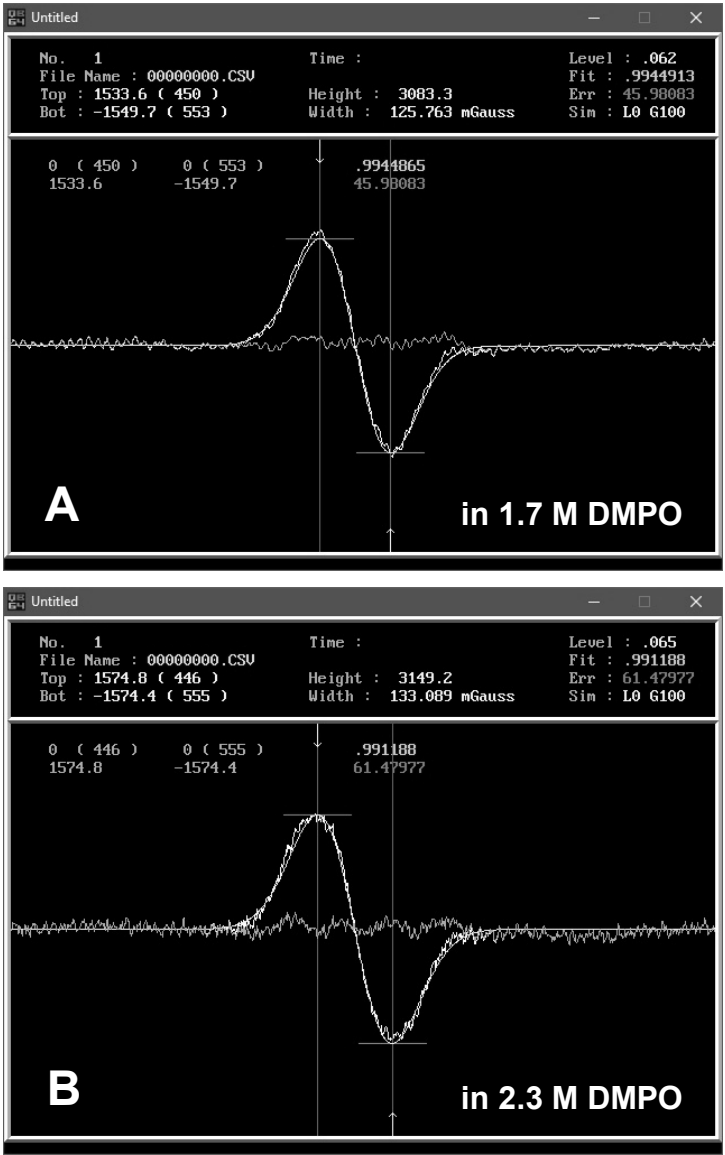


Figure S2. Display windows of the in-house line fitting software. A calculated Gaussian line was fitted on the 2nd line from the lower field of the 4-line EPR spectrum of DMPO-OH in (A) 1661 mM and (B) 2278 mM DMPO water solution by X-ray irradiation. The white line indicates the experimental spectrum.