

Fig. S1 Gibbs energy diagram or the reaction of HMF + H₂O under neutral conditions (298 K, 1 atm).



Fig. S2 Gibbs energy diagram for the reactions of $HMF + O_2$ under neutral conditions (298 K, 1 atm).



Fig. S3 Gibbs energy diagram for Fig. 2 up to dimer formation. Red and blue lines indicate the energies of $[HMF + OH]^-$ and $[2HMF + OH]^-$, respectively.



Fig. S4 Gibbs energy diagram for Fig. S1 up to dimer formation. Red and blue lines indicate the energies of $[HMF + OH]^-$ and $[2HMF + OH]^-$, respectively.