

Electronic Supplementary Material for PCCP  
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Uracil

E(NN)=358.335960, E(HF/6-31(+) $G^*$ )=-412.480723, E(CCSD/6-31(+) $G^*$ )=-413.683919

C	1.282409	0.344117	0.000000
O	2.305402	1.000355	0.000000
N	0.034953	0.973561	0.000000
C	-1.214176	0.400371	0.000000
N	-1.169168	-0.978725	0.000000
C	-0.007293	-1.695619	0.000000
C	1.195482	-1.099235	0.000000
H	2.102515	-1.668441	0.000000
H	-0.122433	-2.764793	0.000000
H	-2.063639	-1.435070	0.000000
O	-2.250828	1.027713	0.000000
H	0.047936	1.982097	0.000000

Stacked uracil dimer, the geometry of the neutral

E(NN)=1161.470703, E(HF/6-31(+) $G^*$ )=-824.960277, E(CCSD/6-31(+) $G^*$ )=-827.387312

N	-2.072256	1.105980	-0.071103
C	-2.059504	0.589911	-1.337439
H	-2.367357	1.268570	-2.118682
C	-1.681094	-0.681127	-1.585525
H	-1.672908	-1.080128	-2.585041
C	-1.230666	-1.524219	-0.493625
O	-0.782296	-2.655801	-0.599081
N	-1.330922	-0.910847	0.761600
H	-0.977606	-1.439511	1.550335
C	-1.669186	0.398162	1.045691
O	-1.609958	0.888541	2.156770
H	-2.242063	2.086718	0.083778
N	2.072256	-1.105980	-0.071103
C	2.059504	-0.589911	-1.337439
H	2.367357	-1.268570	-2.118682
C	1.681094	0.681127	-1.585525
H	1.672908	1.080128	-2.585041
C	1.230666	1.524219	-0.493625
O	0.782296	2.655801	-0.599081
N	1.330922	0.910847	0.761600
H	0.977606	1.439511	1.550335
C	1.669186	-0.398162	1.045691
O	1.609958	-0.888541	2.156770
H	2.242063	-2.086718	0.083778

Stacked uracil dimer, the cation geometry

E(NN)=1152.637409, E(HF/6-31(+) $G^*$ )=-824.933002, E(CCSD/6-31(+) $G^*$ )=-827.352475

N	1.444053	1.105646	-0.823447
H	1.262853	1.632814	-1.662002
C	2.363500	0.097169	-0.944097
O	2.921317	-0.206549	-1.941200
C	0.757351	1.484087	0.317679
O	-0.070474	2.348460	0.296920
N	2.604736	-0.589913	0.263726
H	3.259739	-1.350492	0.186024
C	2.040503	-0.287749	1.419215
H	2.346338	-0.866403	2.273578
C	1.097947	0.710321	1.509375
H	0.768243	1.074880	2.461650
C	-1.097947	-0.710321	1.509376
H	-0.768243	-1.074879	2.461650
C	-2.040503	0.287749	1.419215
H	-2.346338	0.866404	2.273578
N	-2.604736	0.589913	0.263726

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H	-3.259739	1.350492	0.186024
C	-2.363500	-0.097169	-0.944097
O	-2.921317	0.206549	-1.941200
N	-1.444053	-1.105646	-0.823447
H	-1.262853	-1.632814	-1.662001
C	-0.757351	-1.484087	0.317679
O	0.070474	-2.348460	0.296920

H-bonded uracil dimer, the geometry of the neutral

$E(\text{NN})=1032.281916$ ,  $E(\text{HF}/6-31(+)\text{G}^*)=-824.983139$ ,  $E(\text{CCSD}/6-31(+)\text{G}^*)=-827.399595$

O	-0.999831	-1.474772	0.000000
C	-1.908930	-0.644185	0.000000
N	-1.694255	0.706319	0.000000
C	-2.718913	1.613974	0.000000
C	-4.016749	1.243246	0.000000
C	-4.360922	-0.165195	0.000000
N	-3.231326	-1.004870	0.000000
O	-5.481203	-0.643233	0.000000
H	-4.810563	1.970059	0.000000
H	-0.714742	1.017291	0.000000
H	-3.415735	-1.998756	0.000000
H	-2.410651	2.648930	0.000000
O	0.999831	1.474772	0.000000
C	1.908930	0.644185	0.000000
N	1.694255	-0.706319	0.000000
C	2.718913	-1.613974	0.000000
C	4.016749	-1.243246	0.000000
C	4.360922	0.165195	0.000000
N	3.231326	1.004870	0.000000
O	5.481203	0.643233	0.000000
H	4.810563	-1.970059	0.000000
H	0.714742	-1.017291	0.000000
H	3.415735	1.998756	0.000000
H	2.410651	-2.648930	0.000000