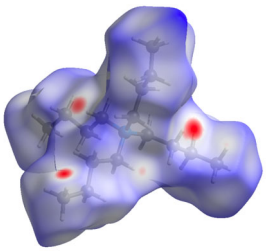
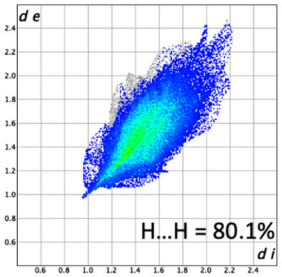
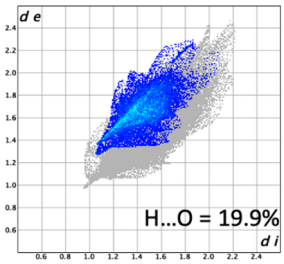
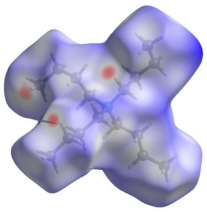
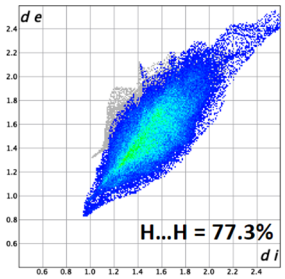
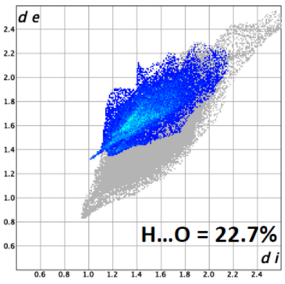
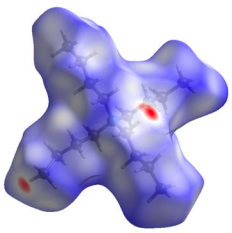
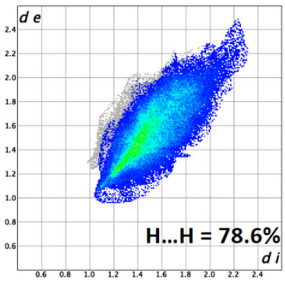
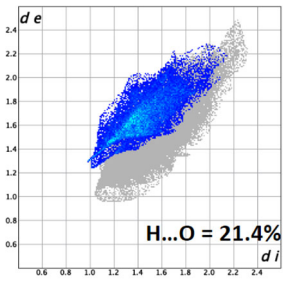
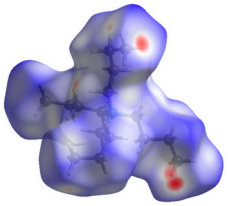
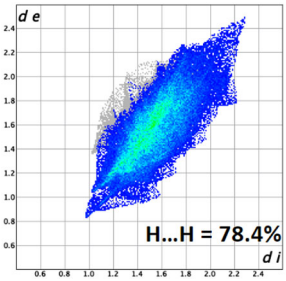
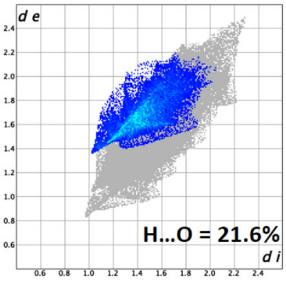
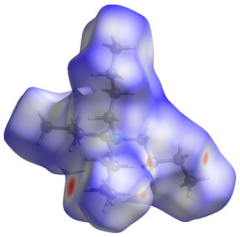
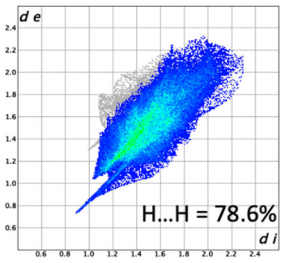
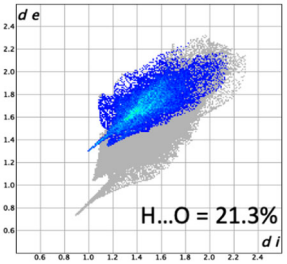
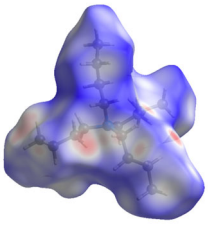
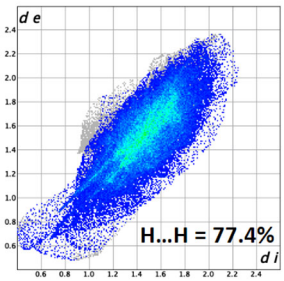
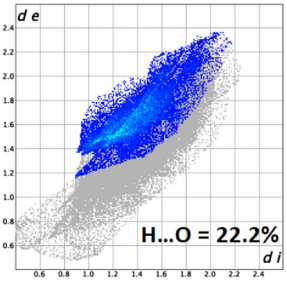
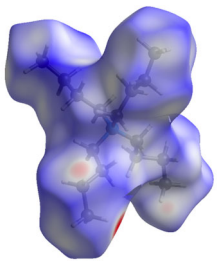
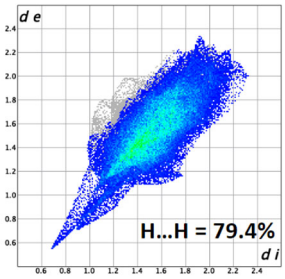
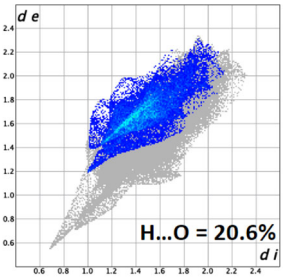
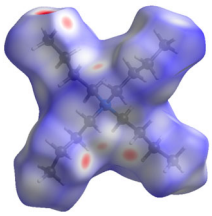
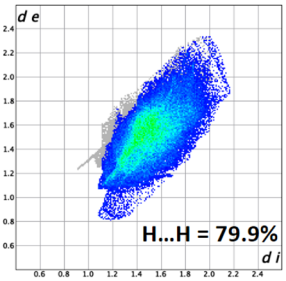
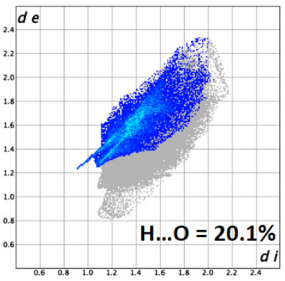
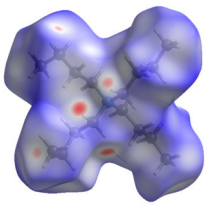
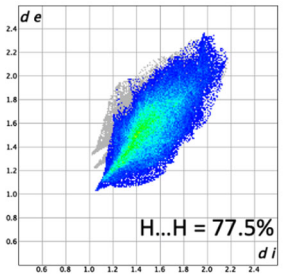
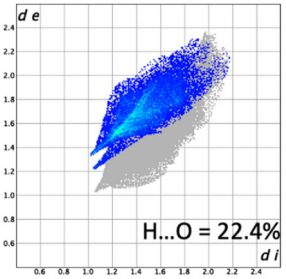
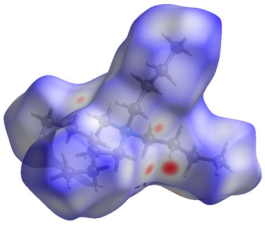
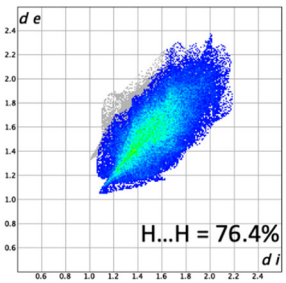
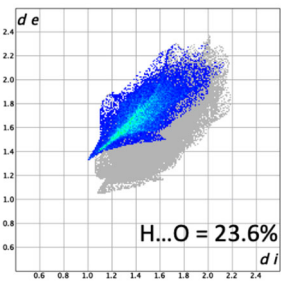
SUPPLEMENTARY INFORMATION

Table S1: Hirshfeld surfaces mapped using d_{norm} and the corresponding delineated fingerprint plots for $[N(n\text{-}C_4H_9)_4]^+$ cations in $[N(n\text{-}C_4H_9)_4][ClO_4]$ crystal structure.

Cation	Hirshfeld surface	Breakdown fingerprint plots	
		H…H	H…O
A			
B			
C			
D			

E		d e H...H = 78.6% d i	d e H...O = 21.3% d i
F		d e H...H = 77.4% d i	d e H...O = 22.2% d i
G		d e H...H = 79.4% d i	d e H...O = 20.6% d i
H		d e H...H = 79.9% d i	d e H...O = 20.1% d i
I		d e H...H = 77.5% d i	d e H...O = 22.4% d i
J		d e H...H = 76.4% d i	d e H...O = 23.6% d i

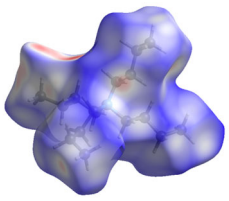
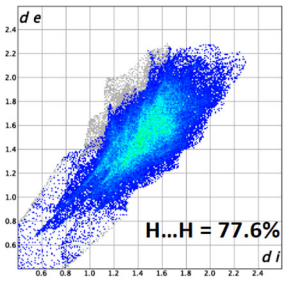
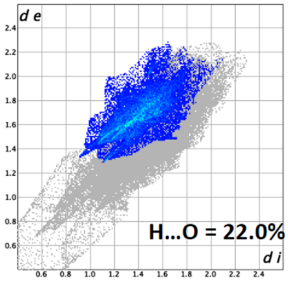
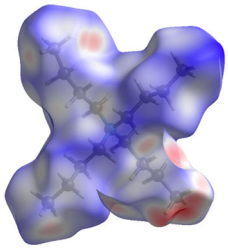
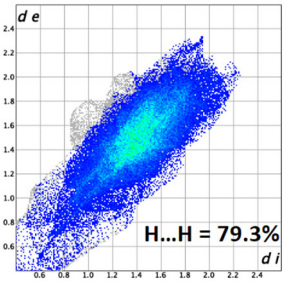
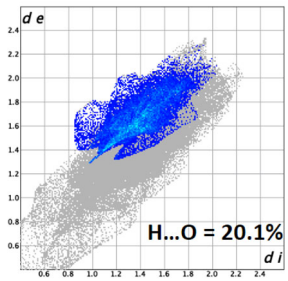
K		d e H...H = 77.6% d i	d e H...O = 22.0% d i
L		d e H...H = 79.3% d i	d e H...O = 20.1% d i

Table S2: Table of average, median, standard deviation, minimum and maximum bond lengths and bond angles for different $[N(n\text{-}C_4H_9)_4]^+$

	C-N (Å)					C-C (Å)					C-N-C (°)					C-C-C (°)				
	Mean	Median	St Dev	Min	Max	Mean	Median	St Dev	Min	Max	Mean	Median	St Dev	Min	Max	Mean	Median	St Dev	Min	Max
Conformer																				
1	1.512	1.514	0.007	1.502	1.518	1.512	1.518	0.018	1.474	1.532	109.47	109.01	2.08	107.33	112.82	111.09	111.24	2.72	107.43	116.44
2	1.516	1.516	0.006	1.508	1.523	1.515	1.514	0.015	1.495	1.536	109.49	110.36	4.04	104.81	115.31	111.82	111.20	2.20	108.82	115.55
3	1.501	1.505	0.018	1.475	1.517	1.513	1.517	0.023	1.453	1.542	109.49	110.91	3.54	104.57	112.65	111.22	111.41	2.75	106.08	115.25
4	1.521	1.520	0.016	1.502	1.541	1.516	1.515	0.010	1.500	1.535	109.47	109.50	2.19	105.67	112.14	112.28	112.74	2.07	109.80	115.68
5	1.508	1.511	0.009	1.495	1.515	1.520	1.519	0.007	1.508	1.538	109.47	109.34	1.47	107.58	111.79	111.91	111.84	2.52	108.02	115.40
6	1.510	1.515	0.012	1.492	1.517	1.516	1.516	0.023	1.465	1.557	108.99	112.91	12.65	88.32	121.75	111.16	112.56	3.32	106.82	115.11
7	1.503	1.507	0.020	1.474	1.522	1.500	1.507	0.021	1.454	1.527	109.39	109.66	3.42	104.91	114.16	117.33	116.34	7.35	109.35	128.23
8	1.511	1.510	0.007	1.503	1.519	1.512	1.512	0.017	1.482	1.538	109.48	110.19	3.59	104.38	112.98	111.74	111.35	2.14	108.93	114.97
9	1.520	1.522	0.011	1.505	1.532	1.513	1.520	0.016	1.472	1.526	109.49	110.91	2.50	106.19	111.35	111.90	111.71	1.86	109.42	115.43
10	1.510	1.516	0.028	1.475	1.532	1.509	1.508	0.014	1.481	1.534	109.47	108.96	2.47	107.20	113.81	113.69	113.25	2.57	110.28	117.52
11	1.519	1.524	0.027	1.482	1.546	1.515	1.514	0.019	1.490	1.546	108.78	108.54	9.45	94.99	124.47	112.38	113.28	4.11	106.92	118.27
12	1.503	1.500	0.014	1.491	1.521	1.504	1.503	0.021	1.464	1.554	109.48	108.77	10.30	94.63	125.28	116.12	113.38	6.20	109.95	129.10

Table S3: Table of average, median, standard deviation, minimum and maximum bond lengths and bond angles for different $[ClO_4]^-$ anions, (Å, º).

	Cl-O (Å)					O-Cl-O (°)				
	Mean	Median	St Dev	Min	Max	Mean	Median	St Dev	Min	Max
Conformer										
1	1.420	1.422	0.011	1.406	1.431	109.46	109.56	1.24	107.81	111.32
2	1.391	1.395	0.019	1.364	1.409	109.44	109.09	2.17	107.14	113.24
3	1.380	1.372	0.034	1.351	1.425	109.35	109.59	3.86	103.14	114.57
4	1.347	1.342	0.034	1.314	1.392	109.41	109.33	2.90	105.58	113.01
5	1.389	1.383	0.027	1.364	1.428	109.43	109.24	2.31	106.48	112.38
6	1.407	1.402	0.021	1.388	1.435	109.44	109.47	2.03	107.36	111.92
7	1.400	1.403	0.011	1.384	1.409	109.47	109.67	0.96	108.07	110.61
8	1.397	1.394	0.011	1.389	1.412	109.46	109.65	1.36	107.13	110.85
9	1.406	1.410	0.015	1.385	1.419	109.46	109.14	1.06	108.25	110.98
10	1.416	1.416	0.015	1.399	1.434	109.46	109.47	1.06	107.60	110.56
11	1.429	1.431	0.004	1.423	1.431	109.47	109.31	0.65	108.69	110.40
12	1.415	1.412	0.008	1.408	1.427	109.47	109.71	0.99	107.81	110.47

Table S4: Selected hydrogen-bond geometry (Å, º).

D—H···A	D—H	H···A	D···A	D—H···A
C01A-H01*A*···O1J^{i}	0.99	2.52	3.406(14)	148
C05A-H05*A*···O3A	0.99	2.61	3.467(13)	145
C09A-H09*A*···O3B^{ii}	0.99	2.45	3.424(19)	169
C13A-H13*A*···O7B^{ii}	0.99	2.63	3.324(17)	127
C01B-H01*D*···O4A	0.99	2.43	3.367(13)	158
C09B-H09*C*···O3B^{ii}	0.99	2.62	3.445(17)	141
C13B-H13*C*···O1I	0.99	2.61	3.427(13)	140
C14B-H14*C*···O5B^{ii}	0.99	2.64	3.517(17)	148
C01C-H01*E*···O4B	0.99	2.37	3.340(19)	167
C01C-H01*E*···O5B	0.99	2.53	3.395(19)	146
C06C-H06*E*···O4L	0.99	2.39	3.350(14)	164
C09C-H09*E*···O2L^{iii}	0.99	2.60	3.571(16)	167
C01D-H01*H*···O3A	0.99	2.58	3.517(13)	159
C05D-H05*H*···O1B	0.99	2.57	3.443(14)	147
C09D-H09*H*···O4K^{iv}	0.99	2.50	3.450(15)	160
C06E-H06*J*···O4F	0.99	2.52	3.445(16)	156
C09E-H09*J*···O1I	0.99	2.40	3.377(15)	169
C14E-H14*I*···O7C	0.99	2.60	3.48(2)	149
C02F-H02*K*···O2E^{v}	0.99	2.65	3.62(3)	167
C05F-H05*L*···O2E^{v}	0.99	2.58	3.48(3)	150
C5F'-H5F*A*···O4E^{vi}	0.99	2.60	3.32(4)	130
C6F'-H6F*A*···O2E^{vi}	0.99	2.37	3.22(4)	143
C09F-H09*K*···O1C	0.99	2.51	3.27(3)	134
C09'-H0:*Q*···O1D^{ii}	0.99	2.40	3.30(4)	151
C09'-H0:*R*···O1C	0.99	2.62	3.49(4)	148
C13F-H13*L*···O3E^{vi}	0.99	2.63	3.16(2)	114
C09G-H09*N*···O4D	0.99	2.51	3.41(2)	152
C13G-H13*N*···O4C	0.99	2.58	3.24(2)	124
C13G-H13*N*···O5C	0.99	2.62	3.55(3)	157
C01H-H01*P*···O3D	0.99	2.24	3.211(15)	167
C02H-H02*O*···O7H	0.99	2.44	3.360(18)	155
C05H-H05*O*···O1H^{vii}	0.99	2.55	3.419(14)	147
C09H-H09*O*···O2H	0.99	2.55	3.435(18)	149
C10H-H10*P*···O6C	0.99	2.62	3.42(2)	138
C13H-H13*O*···O2C	0.99	2.44	3.314(18)	148
C13H-H13*O*···O6C	0.99	2.48	3.46(2)	176

C01I-H01*Q*···O4K	0.99	2.56	3.489(13)	157
C05I-H05*Q*···O1L	0.99	2.44	3.343(13)	151
C05I-H05*R*···O1K	0.99	2.46	3.435(13)	167
C01J-H01*S*···O4I^{viii}	0.99	2.62	3.367(15)	132
C01J-H01*T*···O2J^{viii}	0.99	2.60	3.522(15)	155
C02J-H02*S*···O3L	0.99	2.61	3.566(14)	163
C05J-H05*T*···O3K	0.99	2.59	3.568(15)	171
C10J-H10*S*···O1K	0.99	2.44	3.424(15)	174
C13J-H13*S*···O1K	0.99	2.56	3.504(15)	160
C01K-H01*V*···O2H	0.99	2.50	3.47(2)	166
C05K-H05*U*···O6H	0.99	2.49	3.46(3)	167
C06K-H0:*M*···O1G	0.99	2.64	3.56(2)	153
C09K-H09*U*···O2G	0.99	2.61	3.49(2)	148
C10K-H10*U*···O2F	0.99	2.33	3.22(2)	148
C09*-H0:*T*···O2F	0.99	2.63	3.45(2)	140
C14K-H14*V*···O6H	0.99	2.54	3.323(18)	136
C01L-H01*W*···O1E	0.99	2.36	3.348(19)	173
C01L-H01*X*···O2F	0.99	2.57	3.535(18)	164
C06L-H06*X*···O3H^{ii}	0.99	2.57	3.230(19)	124
C10"-H10*Z*···O1G^{ii}	0.99	2.36	3.10(3)	131
C10"-H10*Z*···O2G^{ii}	0.99	2.51	3.49(3)	171
C13L-H13*X*···O3G^{ii}	0.99	2.52	3.47(2)	161
C14L-H14*W*···O4F	0.99	2.61	3.44(2)	141

Symmetry codes: (i) –*x*, –*y*+1, –*z*; (ii) *x*–1, *y*, *z*; (iii) –*x*+1, –*y*+1, –*z*; (iv) *x*, *y*–1, *z*; (v) *x*, *y*+1, *z*; (vi) –*x*, –*y*+1, –*z*+1; (vii) –*x*+1, –*y*+1, –*z*+1; (viii) *x*+1, *y*, *z*.