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Boron triel bonding: A weak electrostatic interaction lacking of electron-density descriptors

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1. Theoretical AIM analysis of compounds 2–3



Figure S1. Static electron density deformation of **1**. Isosurface levels at ±0.15 e/Å³. Blue electron excess, red electron deficient region.

Figure S2 shows the distribution of bond CPs and bond paths in compounds **2** and **3**. In compound **2** only one CP is found that connects the O atoms of the N-oxide group to the oxygen atom of the carboxylate, in good agreement to the experimental findings. In compound three, three bond critical points are found. One corresponding to the p-hole interaction interconnecting the O atom of one nitro group to the N-atom of the adjacent nitro group. In addition, two O-atoms are interconnected through a bond CP and bond path, thus characterizing the chalcogen-chalcogen interaction. Finally, this O atom is also connected to one aromatic C atom. This distribution of CPs is identical to that found experimentally.



Figure S2. Distribution of bond critical points (red spheres) and bond paths in **2** (a) and compound **3** (b) computed using the M06-2X/def2-TZVP wavefunction.



Figure S4. Static electron density deformation of **2** and **3**. Isosurface levels at $\pm 0.15 \text{ e/Å}^3$. Blue electron excess, red electron deficient region.

2. Dynamic deformation density maps



Figure S5. Dynamic deformation density maps of compounds 1, a) (at the pyridomium ring plane), 2, b) (C1-O1-O2 plane) and 3, c) (phenyl ring plane). Static deformation electron density deformation of compounds 1, d), 2, e) and 3, f). Contours levels at 0.05 e/Å³

3. Fourier residual maps



Figure S6. Fourier residual maps (Contours levels at 0.05 e/Å³), fractal dimension test and scaling factor plots of compounds **1** a), b) and c); **2** d), e) and f); **1** g), h) and i); Plane definition as in Fig. S5.

4. Tables with AIM data Tables with AIM data

Table S1. Compound **1.** Bond energies calculated using the Abramov expression¹⁶, bond distances and distances from the atom to the critical point, in Å. Electron density at the critical point in e/Å³. Eigen values of the Hessian matrix and ellipticy at the critical point.

		Hartree/Bohr ³		kJ/mol,	/Bohr³										
Atom1	Atom2	Gcp	Vср	Gcp	Vcp	DISTIJ	DCPI	DCPJ	DEN	LAPL	3-EIGEN	I-VALUES	5	ELLIPTIC	TYPE
01	B1	0.3099	-0.4847	813.7	-1272.7	1.361	0.907	0.456	1.44	13.0	-14.33	-13.47	40.83	0.064	(3,-1)
01	H10	0.2211	-0.8179	580.5	-2147.3	0.991	0.753	0.239	2.28	-36.2	-34.38	-34.27	32.43	0.003	(3,-1)
02	B1	0.3141	-0.5158	824.6	-1354.4	1.356	0.901	0.455	1.52	10.8	-15.06	-14.70	40.59	0.025	(3,-1)
02	H2O	0.2139	-0.7824	561.5	-2054.1	0.982	0.748	0.234	2.22	-34.2	-33.33	-33.27	32.41	0.002	(3,-1)
N1	C3	0.3041	-0.8756	798.4	-2298.9	1.343	0.813	0.530	2.31	-25.8	-18.04	-16.38	8.64	0.101	(3,-1)
N1	C4	0.2695	-0.8141	707.6	-2137.4	1.342	0.836	0.506	2.23	-26.5	-17.89	-15.53	6.90	0.152	(3,-1)
N1	H1	0.2066	-0.6669	542.5	-1751.0	1.033	0.774	0.259	1.99	-24.5	-26.65	-25.80	28.00	0.033	(3,-1)
C1	C2	0.2827	-0.7504	742.2	-1970.2	1.402	0.706	0.697	2.09	-17.8	-15.56	-13.51	11.23	0.152	(3,-1)
C1	C5	0.2878	-0.7577	755.7	-1989.4	1.403	0.687	0.715	2.10	-17.6	-16.12	-13.42	11.99	0.201	(3,-1)
C1	B1	0.1051	-0.3050	275.9	-800.7	1.593	1.080	0.514	1.23	-9.1	-9.49	-9.33	9.68	0.017	(3,-1)
C2	C3	0.3085	-0.8382	810.0	-2200.7	1.384	0.648	0.736	2.24	-21.3	-17.52	-14.08	10.28	0.244	(3,-1)
C2	H2	0.2118	-0.6117	556.0	-1605.9	1.089	0.718	0.371	1.87	-18.1	-17.71	-16.68	16.26	0.062	(3,-1)
C3	H3	0.1879	-0.5774	493.3	-1516.0	1.089	0.758	0.331	1.82	-19.4	-18.55	-17.37	16.48	0.068	(3,-1)
C4	C5	0.2997	-0.8245	786.9	-2164.7	1.384	0.733	0.651	2.22	-21.7	-17.50	-14.13	9.93	0.239	(3,-1)
C4	H4	0.1852	-0.5705	486.1	-1497.8	1.089	0.761	0.329	1.80	-19.3	-18.38	-17.03	16.12	0.080	(3,-1)
C5	H5	0.2165	-0.6252	568.3	-1641.3	1.089	0.727	0.362	1.89	-18.5	-18.44	-17.53	17.43	0.052	(3,-1)
Non cov	alent inte	ractions													
CL1	H1	0.0236	-0.0219	62.0	-57.4	2.100	1.465	0.646	0.178	2.5	-0.67	-0.60	3.71	0.123	(3,-1)
CL1	H2O	0.0202	-0.0188	53.0	-49.3	2.137	1.509	0.633	0.163	2.1	-0.41	-0.40	2.90	0.019	(3,-1)
CL1	H10	0.0178	-0.0170	46.7	-44.6	2.149	1.504	0.692	0.156	1.8	-0.62	-0.41	2.83	0.492	(3,-1)
01	H5	0.0082	-0.0059	21.5	-15.4	2.765	1.598	1.178	0.063	1.0	-0.19	-0.05	1.26	3.211	(3,-1)
H3	01	0.0079	-0.0057	20.7	-14.9	2.432	1.058	1.420	0.062	1.0	-0.23	-0.21	1.41	0.094	(3,-1)
CL1	H3	0.0064	-0.0045	16.7	-11.9	2.680	1.726	0.979	0.053	0.8	-0.18	-0.13	1.11	0.355	(3,-1)
CL1	H5	0.0059	-0.0040	15.6	-10.6	2.701	1.799	0.964	0.046	0.8	-0.12	-0.06	0.93	1.129	(3,-1)
CL1	C1	0.0041	-0.0033	10.7	-8.5	3.537	1.833	1.725	0.050	0.5	-0.12	-0.08	0.67	0.477	(3,-1)
CL1	02	0.0037	-0.0028	9.8	-7.4	3.557	1.891	1.683	0.043	0.5	-0.10	-0.07	0.62	0.496	(3,-1)
CL1	C3	0.0035	-0.0026	9.1	-6.7	3.575	1.892	1.721	0.040	0.4	-0.06	-0.02	0.50	2.723	(3,-1)
CL1	H2	0.0026	-0.0017	6.9	-4.6	3.216	1.928	1.316	0.027	0.3	-0.05	-0.05	0.44	0.026	(3,-1)
C4	01	0.0025	-0.0017	6.5	-4.4	3.527	1.786	1.754	0.027	0.3	-0.05	-0.04	0.40	0.325	(3,-1)

Table S2. Compound **2.** Bond energies calculated using the Abramov expression¹⁶, bond distances and distances from the atom to the critical point, in Å. Electron density at the critical point in $e/Å^3$. Eigen values of the Hessian matrix and ellipticy at the critical point.

		Hartree	/Bohr³	kJ/mol/B	ohr³										
Atom	1 Atom	2 Gcp Vcp	0	Gcp Vcp		DISTIJ	DCPI	DCPJ	DEN	LAP	L 3-EIG	EN-VALU	IES	ELLIPTIC	ТҮРЕ
01	C1	0.2990	-0.8997	785.0	-2362.1	1.310	0.816	0.494	2.365	-29.08	-20.56	-19.23	10.71	0.070	(3,-1)
H1A	C1A	0.1909	-0.5867	501.1	-1540.2	1.084	0.340	0.744	1.834	-19.76	-18.63	-17.55	16.42	0.062	(3,-1)
C1	02	0.5109	-1.3512	1341.4	-3547.5	1.216	0.425	0.791	2.968	-31.75	-30.09	-26.87	25.22	0.120	(3,-1)
C1	C2	0.2126	-0.5572	558.3	-1463.0	1.522	0.775	0.747	1.742	-12.72	-12.84	-11.28	11.40	0.139	(3,-1)
H2A	C2A	0.1853	-0.5503	486.6	-1444.7	1.082	0.341	0.741	1.758	-17.31	-17.02	-16.35	16.05	0.041	(3,-1)
H2	C2	0.2080	-0.5776	546.2	-1516.4	1.095	0.368	0.727	1.794	-15.57	-17.00	-16.56	17.99	0.026	(3,-1)
C2	03	0.2544	-0.6306	668.0	-1655.6	1.408	0.588	0.820	1.861	-11.73	-13.79	-13.78	15.84	0.001	(3,-1)
C2	C3	0.1948	-0.4922	511.3	-1292.2	1.543	0.770	0.773	1.609	-9.90	-11.10	-10.53	11.73	0.054	(3,-1)
O3	H3O	0.1725	-0.7575	452.8	-1988.8	0.976	0.761	0.215	2.212	-39.77	-35.80	-34.95	30.98	0.024	(3,-1)
H3	C3	0.2084	-0.5748	547.1	-1509.2	1.096	0.372	0.724	1.788	-15.24	-17.01	-16.34	18.11	0.041	(3,-1)
C3	C4	0.2133	-0.5631	560.1	-1478.3	1.527	0.749	0.779	1.755	-13.15	-13.15	-11.39	11.39	0.155	(3,-1)
C3	04	0.2457	-0.6198	645.1	-1627.2	1.402	0.580	0.822	1.847	-12.38	-13.64	-13.60	14.86	0.003	(3,-1)
C4	06	0.5118	-1.3681	1343.6	-3591.9	1.211	0.423	0.788	2.995	-33.21	-31.57	-27.55	25.91	0.146	(3,-1)
C4	05	0.2841	-0.8587	745.9	-2254.4	1.325	0.510	0.815	2.301	-28.00	-20.11	-18.36	10.47	0.095	(3,-1)
H4A	C4A	0.1900	-0.5639	498.9	-1480.5	1.082	0.340	0.742	1.784	-17.72	-17.36	-16.75	16.39	0.037	(3,-1)
H4	04	0.2092	-0.8305	549.2	-2180.4	0.978	0.227	0.751	2.319	-39.73	-36.59	-35.61	32.47	0.027	(3,-1)
05	H5O	0.1933	-0.6434	507.5	-1689.1	0.980	0.772	0.208	1.956	-24.75	-30.64	-30.48	36.38	0.005	(3,-1)
H5A	C5A	0.1932	-0.5879	507.2	-1543.6	1.082	0.345	0.738	1.835	-19.43	-18.38	-17.41	16.35	0.056	(3,-1)
O2A	N2A	0.5747	-1.0920	1508.9	-2867.1	1.332	0.657	0.675	2.466	5.54	-19.69	-18.55	43.78	0.062	(3,-1)
C3A	C4A	0.2796	-0.7458	734.1	-1958.1	1.402	0.714	0.688	2.081	-17.99	-16.43	-13.02	11.46	0.262	(3,-1)
C3A	C6A	0.2381	-0.6109	625.0	-1603.8	1.476	0.742	0.734	1.836	-12.99	-14.17	-11.85	13.03	0.196	(3,-1)
C3A	C2A	0.2827	-0.7547	742.3	-1981.4	1.399	0.713	0.686	2.096	-18.24	-16.43	-13.20	11.38	0.245	(3,-1)
C4A	C5A	0.2948	-0.7989	773.9	-2097.6	1.385	0.674	0.711	2.173	-20.18	-17.24	-13.39	10.44	0.287	(3,-1)
C5A	N1A	0.2839	-0.8135	745.3	-2135.9	1.352	0.476	0.876	2.213	-23.69	-18.29	-14.72	9.32	0.243	(3,-1)
C6A	C7A	0.2820	-0.7586	740.5	-1991.6	1.404	0.702	0.702	2.104	-18.75	-16.71	-13.46	11.42	0.242	(3,-1)
C6A	C10A	0.2815	-0.7489	739.0	-1966.3	1.399	0.708	0.691	2.085	-17.93	-16.30	-13.33	11.70	0.223	(3,-1)
C7A	C8A	0.3031	-0.8197	795.9	-2152.2	1.382	0.694	0.688	2.206	-20.58	-17.79	-13.68	10.89	0.301	(3,-1)
C7A	H7A	0.1950	-0.5908	511.9	-1551.0	1.083	0.750	0.333	1.839	-19.36	-18.46	-17.70	16.80	0.043	(3,-1)

		Hartree,	/Bohr³	kJ/mol/	Bohr ³										
Atom1	Atom2	Gcp	Vср	Gcp	Vcp	DISTIJ	DCPI	DCPJ	DEN	LAPL	3-EIGEN-	VALUES		ELLIPTIC	ТҮРЕ
															(2, 1)
C8A	N2A	0.2885	-0.8232	757.3	-2161.4	1.354	0.495	0.859	2.228	-23.74	-17.66	-15.17	9.09	0.164	(3,-1)
C8A	H8A	0.2000	-0.5891	525.0	-1546.6	1.082	0.734	0.348	1.830	-18.23	-18.08	-17.18	17.03	0.053	(3,-1)
C9A	C10A	0.3043	-0.8181	799.0	-2147.9	1.383	0.707	0.676	2.202	-20.19	-17.51	-13.86	11.17	0.263	(3,-1)
C9A	N2A	0.2939	-0.8296	771.7	-2178.2	1.348	0.482	0.866	2.235	-23.31	-17.65	-15.22	9.56	0.159	(3,-1)
C9A	H9A	0.1955	-0.5864	513.4	-1539.6	1.082	0.734	0.348	1.829	-18.83	-18.23	-17.27	16.68	0.055	(3,-1)
C10A	H10A	0.2058	-0.5984	540.4	-1571.0	1.081	0.722	0.359	1.844	-18.00	-17.68	-16.96	16.64	0.043	(3,-1)
C2A	C1A	0.2992	-0.8139	785.7	-2136.8	1.379	0.667	0.712	2.198	-20.76	-17.64	-13.60	10.48	0.297	(3,-1)
01A	N1A	0.5791	-1.1131	1520.4	-2922.3	1.326	0.658	0.668	2.501	4.35	-20.12	-18.81	43.28	0.069	(3,-1)
C1A	N1A	0.2872	-0.8253	754.0	-2166.9	1.350	0.480	0.870	2.233	-24.19	-18.87	-14.51	9.19	0.301	(3,-1)
Non cov	alent inte	ractions													
H50	01A	0.0653	-0.0786	171.4	-206.3	1.546	0.496	1.050	0.443	5.01	-2.75	-2.69	10.45	0.021 (3,-1)
03	H4	0.0409	-0.0335	107.3	-87.8	1.707	1.181	0.529	0.208	4.66	-0.72	-0.71	6.09	0.013 (3,-1)
H3O	02	0.0164	-0.0140	43.0	-36.8	2.022	0.778	1.263	0.128	1.80	-0.55	-0.50	2.86	0.095 (3,-1)
06	H10A	0.0115	-0.0079	30.2	-20.8	2.224	1.372	0.856	0.071	1.45	-0.25	-0.25	1.95	0.020 (3,-1)
H4A	04	0.0089	-0.0063	23.5	-16.6	2.340	0.942	1.416	0.065	1.11	-0.23	-0.23	1.58	0.013 (3,-1)
04	H9A	0.0085	-0.0062	22.3	-16.3	2.418	1.416	1.039	0.067	1.04	-0.24	-0.23	1.50	0.050 (3,-1)
05	H3	0.0067	-0.0047	17.5	-12.2	2.515	1.476	1.073	0.053	0.83	-0.16	-0.14	1.13	0.177 (3,-1)
H5A	06	0.0065	-0.0046	17.0	-12.1	2.556	1.167	1.446	0.054	0.80	-0.17	-0.16	1.13	0.084 (3,-1)
H2	01	0.0058	-0.0040	15.2	-10.6	2.602	1.151	1.503	0.048	0.73	-0.13	-0.11	0.96	0.131 (3,-1)
03	H9A	0.0050	-0.0035	13.2	-9.2	2.744	1.548	1.240	0.044	0.63	-0.11	-0.09	0.84	0.217 (3,-1)
C4A	C10A	0.0045	-0.0034	11.7	-8.9	3.230	1.608	1.625	0.049	0.53	-0.07	-0.04	0.64	0.744 (3,-1)
06	H4A	0.0035	-0.0022	9.1	-5.8	2.784	1.579	1.237	0.029	0.45	-0.08	-0.06	0.59	0.355 (3,-1)
02	O2A	0.0033	-0.0022	8.7	-5.7	3.373	1.878	1.594	0.030	0.43	-0.07	-0.04	0.54	0.739 (3,-1)
06	C5A	0.0033	-0.0021	8.7	-5.6	3.335	1.607	1.735	0.029	0.43	-0.06	-0.03	0.53	1.059 (3,-1)
H10A	04	0.0032	-0.0021	8.3	-5.5	2.944	1.348	1.651	0.030	0.41	-0.08	-0.05	0.54	0.579 (3,-1)
06	01A	0.0030	-0.0020	8.0	-5.2	3.390	1.912	1.581	0.028	0.39	-0.06	-0.03	0.49	0.819 (3,-1)
N1A	C3A	0.0023	-0.0016	6.2	-4.1	3.587	1.784	1.813	0.026	0.30	-0.03	-0.01	0.34	2.200 (3,-1)
02	H4	0.0005	-0.0003	1.4	-0.7	3.542	1.956	1.594	0.005	0.07	-0.01	0.00	0.09	1.768 (3,-1)

	Hartree/Bohr ³		kJ/mol/B	ohr ³										
Atom2	Gcp	Vср	Gcp	Vср	DISTIJ	DCPI	DCPJ	DEN	LAPL	3-EIGEN	I-VALUES		ELLIPTIC	ТҮРЕ
01	0.8322	-1.8173	2184.99	-4771.27	1.227	0.591	0.635	3.44	-14.73	-31.61	-28.84	45.72	0.096	(3,-1)
02	0.7900	-1.6957	2074.08	-4452.05	1.224	0.592	0.632	3.29	-11.16	-28.93	-27.52	45.29	0.051	(3,-1)
C1	0.2129	-0.5602	559.00	-1470.83	1.470	0.893	0.578	1.75	-12.95	-12.48	-10.66	10.19	0.170	(3,-1)
C2	0.2862	-0.7846	751.52	-2059.86	1.389	0.708	0.681	2.15	-20.44	-16.03	-13.38	8.97	0.199	(3,-1)
C3	0.3028	-0.8277	794.88	-2173.24	1.391	0.732	0.660	2.22	-21.42	-16.47	-13.82	8.87	0.192	(3,-1)
C3	0.2822	-0.7770	740.99	-2040.11	1.391	0.701	0.691	2.14	-20.49	-15.54	-13.28	8.33	0.170	(3,-1)
H2	0.2116	-0.6276	555.58	-1647.72	1.077	0.707	0.370	1.90	-19.70	-17.88	-17.11	15.30	0.045	(3,-1)
H3	0.2035	-0.5957	534.18	-1564.08	1.077	0.708	0.369	1.84	-18.20	-16.83	-16.40	15.03	0.026	(3,-1)
alent inte	ractions													
01	0.0067	-0.0046	17.45	-12.11	2.965	1.487	1.488	0.05	0.84	-0.14	-0.05	1.02	1.904	(3,-1)
02	0.0040	-0.0027	10.58	-7.15	3.278	1.752	1.554	0.04	0.51	-0.10	-0.09	0.70	0.203	(3,-1)
02	0.0032	-0.0020	8.51	-5.27	3.271	1.650	1.636	0.03	0.43	-0.06	-0.04	0.53	0.419	(3,-1)
	Atom2 01 02 C1 C2 C3 C3 H2 H3 ralent inte 01 02 02	Atom2 Gcp 01 0.8322 02 0.7900 C1 0.2129 C2 0.2862 C3 0.3028 C3 0.2822 H2 0.2116 H3 0.2035 ralent interactions 01 01 0.0067 02 0.0032	Atom2GcpVcpO10.8322-1.8173O20.7900-1.6957C10.2129-0.5602C20.2862-0.7846C30.3028-0.8277C30.2822-0.7770H20.2116-0.6276H30.2035-0.5957ralent interactionsO10.0067-0.0046O20.0040-0.0027O20.0032-0.0020	Atom2 Gcp Vcp Gcp 01 0.8322 -1.8173 2184.99 02 0.7900 -1.6957 2074.08 C1 0.2129 -0.5602 559.00 C2 0.2862 -0.7846 751.52 C3 0.3028 -0.8277 794.88 C3 0.2822 -0.7770 740.99 H2 0.2116 -0.6276 555.58 H3 0.2035 -0.5957 534.18 ralent interactions C1 0.0067 -0.0046 17.45 O2 0.0032 -0.0020 8.51	Hartree/Bohr³kJ/mol/Bohr³Atom2GcpVcpGcpVcp010.8322-1.81732184.99-4771.27020.7900-1.69572074.08-4452.05C10.2129-0.5602559.00-1470.83C20.2862-0.7846751.52-2059.86C30.3028-0.8277794.88-2173.24C30.2822-0.7770740.99-2040.11H20.2116-0.6276555.58-1647.72H30.2035-0.5957534.18-1564.08ralent interactionsC10.0067-0.002617.45-12.11O20.0040-0.002710.58-7.15O20.0032-0.00208.51-5.27	Atom2GcpVcpGcpVcpDISTIJ010.8322-1.81732184.99-4771.271.227020.7900-1.69572074.08-4452.051.224C10.2129-0.5602559.00-1470.831.470C20.2862-0.7846751.52-2059.861.389C30.3028-0.8277794.88-2173.241.391C30.2822-0.7770740.99-2040.111.391H20.2116-0.6276555.58-1647.721.077H30.2035-0.5957534.18-1564.081.077ralent interactionsC10.0067-0.002617.45-12.112.965O20.0040-0.002710.58-7.153.278O20.0032-0.00208.51-5.273.271	Atom2GcpVcpGcpVcpDISTIJDCPI010.8322-1.81732184.99-4771.271.2270.591020.7900-1.69572074.08-4452.051.2240.592C10.2129-0.5602559.00-1470.831.4700.893C20.2862-0.7846751.52-2059.861.3890.708C30.3028-0.8277794.88-2173.241.3910.732C30.2822-0.7770740.99-2040.111.3910.701H20.2116-0.6276555.58-1647.721.0770.707H30.2035-0.5957534.18-1564.081.0770.708alent interactionsc010.0067-0.002710.58-7.153.2781.752020.0032-0.00208.51-5.273.2711.650	Hartree/Bohr³kJ/mol/Bohr³Atom2GcpVcpGcpVcpDISTIJDCPIDCPJ010.8322-1.81732184.99-4771.271.2270.5910.635020.7900-1.69572074.08-4452.051.2240.5920.632C10.2129-0.5602559.00-1470.831.4700.8930.578C20.2862-0.7846751.52-2059.861.3890.7080.681C30.3028-0.8277794.88-2173.241.3910.7320.660C30.2822-0.7770740.99-2040.111.3910.7010.691H20.2116-0.6276555.58-1647.721.0770.7070.370H30.2035-0.5957534.18-1564.081.0770.7080.369ralent interactionsC10.0067-0.004617.45-12.112.9651.4871.488O20.0040-0.002710.58-7.153.2781.7521.554O20.0032-0.00208.51-5.273.2711.6501.636	Hartree/Bohr³kJ/mol/Bohr³Atom2GcpVcpGcpVcpDISTIJDCPIDCPJDEN010.8322-1.81732184.99-4771.271.2270.5910.6353.44020.7900-1.69572074.08-4452.051.2240.5920.6323.29C10.2129-0.5602559.00-1470.831.4700.8930.5781.75C20.2862-0.7846751.52-2059.861.3890.7080.6812.15C30.3028-0.8277794.88-2173.241.3910.7010.6912.14H20.2116-0.6276555.58-1647.721.0770.7070.3701.90H30.2035-0.5957534.18-1564.081.0770.7080.3691.84ralent interactions010.0067-0.004617.45-12.112.9651.4871.4880.05020.0040-0.002710.58-7.153.2781.7521.5540.04020.0032-0.00208.51-5.273.2711.6501.6360.03	Hartree/Bohr³kJ/mol/Bohr³Atom2GcpVcpGcpVcpDISTIJDCPIDCPJDENLAPLO10.8322-1.81732184.99-4771.271.2270.5910.6353.44-14.73O20.7900-1.69572074.08-4452.051.2240.5920.6323.29-11.16C10.2129-0.5602559.00-1470.831.4700.8930.5781.75-12.95C20.2862-0.7846751.52-2059.861.3890.7080.6812.15-20.44C30.3028-0.8277794.88-2173.241.3910.7320.6602.22-21.42C30.2822-0.7770740.99-2040.111.3910.7010.6912.14-20.49H20.2116-0.6276555.58-1647.721.0770.7070.3701.90-19.70H30.2035-0.5957534.18-1564.081.0770.7080.3691.84-18.20alent interactionsO10.0067-0.002710.58-71.513.2781.7521.5540.040.511O20.0032-0.00208.51-52.773.2711.6501.6360.030.43	Hartree/Bohr3kl/mol/Bohr3Atom2GcpVcpGcpVcpDISTIJDCPIDCPJDENLAPL3-EIGEN010.8322-1.81732184.99-4771.271.2270.5910.6353.44-14.73-31.61020.7900-1.69572074.08-4452.051.2240.5920.6323.29-11.16-28.93C10.2129-0.5602559.00-1470.831.4700.8930.5781.75-12.95-12.48C20.2862-0.7846751.52-2059.861.3890.7080.6812.15-20.44-16.03C30.3028-0.8277794.88-2173.241.3910.7320.6602.22-21.42-16.47C30.2822-0.7770740.99-2040.111.3910.7010.6912.14-20.49-15.54H20.2116-0.6276555.58-1647.721.0770.7070.3701.90-19.70-17.88H30.2035-0.5957534.18-1564.081.0770.7080.3691.84-18.20-16.83relent interactionsO10.0067-0.004617.45-12.112.9651.4871.4880.050.84-0.14O20.0032-0.00208.51-52.73.2711.6501.6360.030.43-0.06	Hartree/Bohr³kJ/mol/Bohr³Atom2GcpVcpGcpVcpDISTIJDCPIDCPJDENLAPL3-EIGEN-VALUES010.8322-1.81732184.99-4771.271.2270.5910.6353.44-14.73-31.61-28.84020.7900-1.69572074.08-4452.051.2240.5920.6323.29-11.16-28.93-27.52C10.2129-0.5602559.00-1470.831.4700.8930.5781.75-12.95-12.48-10.66C20.2862-0.7846751.52-2059.861.3890.7080.6812.15-20.44-16.03-13.38C30.3028-0.8277794.88-2173.241.3910.7320.6602.22-21.42-16.47-13.82C30.2822-0.7770740.99-2040.111.3910.7010.6912.14-20.49-15.54-13.28H20.2116-0.6276555.58-1647.721.0770.7070.3701.90-19.70-17.88-17.11H30.2035-0.5957534.18-1564.081.0770.7070.3691.84-18.20-16.83-16.40ralent interactions1.2112.9651.4871.4880.050.84-0.14-0.05O20.0040-0.002710.58-7.153.2781.7521.5540.040.51-0.10-0.09 <td>Hartree/Bohr³ k//mol/Bohr³ Atom2 Gcp Vcp Gcp Vcp DISTIJ DCPI DEPJ DEN LAPL 3-EIGEN-VALUES 01 0.8322 -1.8173 2184.99 -4771.27 1.227 0.591 0.635 3.44 -14.73 -31.61 -28.84 45.72 02 0.7900 -1.6957 2074.08 -4452.05 1.224 0.592 0.632 3.29 -11.16 -28.93 -27.52 45.29 C1 0.2129 -0.5602 559.00 -1470.83 1.470 0.893 0.578 1.75 -12.95 -12.48 -10.66 10.19 C2 0.2862 -0.7846 751.52 -2059.86 1.389 0.708 0.660 2.21 -16.47 -13.82 8.97 C3 0.3028 -0.8277 794.88 -2173.24 1.391 0.701 0.691 2.14 -20.49 -15.54 -13.28 8.37 C3 0.2822 -0.7770 740.9</td> <td>Hartree/Bohr³ kJ/mol/Bohr³ Atom2 Gcp Vcp Gcp Vcp DISTI DCPI DEPI DEN LAPL 3-EIGEN-VLUES ELLIPTC 01 0.8322 -1.8173 2184.99 -4771.27 1.227 0.591 0.635 3.44 -14.73 -31.61 -28.84 45.72 0.096 02 0.7900 -1.6957 2074.08 -4452.05 1.224 0.592 0.632 3.29 -11.16 -28.93 -27.52 45.29 0.051 C1 0.2129 -0.5602 559.00 -1470.83 1.470 0.893 0.578 1.75 -12.95 -12.48 -10.66 10.19 0.170 C2 0.2862 -0.7846 751.52 -2059.86 1.389 0.708 0.681 2.15 -20.44 -16.03 -13.88 8.97 0.199 C3 0.2822 -0.7770 740.99 -2040.11 1.391 0.701 0.691 2.14 -20.49 -15.45</td>	Hartree/Bohr ³ k//mol/Bohr ³ Atom2 Gcp Vcp Gcp Vcp DISTIJ DCPI DEPJ DEN LAPL 3-EIGEN-VALUES 01 0.8322 -1.8173 2184.99 -4771.27 1.227 0.591 0.635 3.44 -14.73 -31.61 -28.84 45.72 02 0.7900 -1.6957 2074.08 -4452.05 1.224 0.592 0.632 3.29 -11.16 -28.93 -27.52 45.29 C1 0.2129 -0.5602 559.00 -1470.83 1.470 0.893 0.578 1.75 -12.95 -12.48 -10.66 10.19 C2 0.2862 -0.7846 751.52 -2059.86 1.389 0.708 0.660 2.21 -16.47 -13.82 8.97 C3 0.3028 -0.8277 794.88 -2173.24 1.391 0.701 0.691 2.14 -20.49 -15.54 -13.28 8.37 C3 0.2822 -0.7770 740.9	Hartree/Bohr ³ kJ/mol/Bohr ³ Atom2 Gcp Vcp Gcp Vcp DISTI DCPI DEPI DEN LAPL 3-EIGEN-VLUES ELLIPTC 01 0.8322 -1.8173 2184.99 -4771.27 1.227 0.591 0.635 3.44 -14.73 -31.61 -28.84 45.72 0.096 02 0.7900 -1.6957 2074.08 -4452.05 1.224 0.592 0.632 3.29 -11.16 -28.93 -27.52 45.29 0.051 C1 0.2129 -0.5602 559.00 -1470.83 1.470 0.893 0.578 1.75 -12.95 -12.48 -10.66 10.19 0.170 C2 0.2862 -0.7846 751.52 -2059.86 1.389 0.708 0.681 2.15 -20.44 -16.03 -13.88 8.97 0.199 C3 0.2822 -0.7770 740.99 -2040.11 1.391 0.701 0.691 2.14 -20.49 -15.45

Table S 1. Compound **3.** Bond energies calculated using the Abramov expression¹⁶, bond distances and distances from the atom to the critical point, in Å. Electron density at the critical point in e/Å³. Eigen values of the Hessian matrix and ellipticy at the critical point.

5. Crystallographic Table

Table S4. Crystallog	raphic table of the refi	nements of 1 , 2 and 3 . Data collected	d at 90K using Mo $K\alpha$ radiation.
Compound	1	3	2

Compound		1		3	2			
Empirical formula	$C_5 H_7 B$	Cl N O ₂	C ₆ H.	$_{4}$ N ₂ O ₄	C ₁₄ H	I ₁₄ N ₂ O ₈		
Formula weight	159	9.38	16	8.11	142.13			
Crystal system /	Mono	oclinic	Mon	oclinic	Orthorhombic			
Space group	F	Pc	Ρ.	$2_{1}/n$	P	212121		
Friedif _{stat}	12	24		-	7			
Unit cell dimensions	$ \begin{array}{ll} a = 6.20620(5) \mbox{\AA} & \alpha = 90^{\circ} \\ b = 5.25334(4) \mbox{\AA} & \beta = 105.5034(8) \\ c = 11.18373(9) \mbox{\AA} & \gamma = 90^{\circ} \end{array} $		a = 5.66357(3)Å b = 5.37326(3)Å c = 10.91612(7)Å	$\alpha = 90^{\circ}$ $\beta = 92.0201(5)^{\circ}$ $\gamma = 90^{\circ}$				
Volume	351.35	9(5) Å ³	331.99	01(3) Å ³	1409.	47(3) Å ³		
Z	2	2		2		4		
Density (calc.)	1.506	Mg/m ³	1.682	Mg/m ³	1.594	4 Mg/m ³		
Abs. coefficient	0.467	mm ⁻¹	0.145	mm ⁻¹	0.13	3 mm ⁻¹		
F(000)	10	64	1	72	704			
Crystal size	0.3 x 0.3 x	0.25 mm ³	0.35 x 0.3	x 0.2 mm ³	0.3 x 0.2 x 0.2 mm ³			
Refls. collected	31	805	33	917	90175			
Abs. correction	Mult	i-scan	Mult	i-scan	Multi-scan			
Refinement model	Spherical	Multipolar	Spherical	Multipolar	Spherical	Multipolar		
Theta range	3.24 to 58.52°	3.24 to 58.52°	3.74 to 55.16° 3.74 to 55.52°		1.67 to 57.35°	1.67 to 57.35°		
Index ranges	$-11 \le h \le 15$ $-16 \le k \le 14$ $-37 \le 1 \le 31$	$\begin{array}{c} -13 \leq h \leq 13 \\ 0 \leq k \leq 15 \\ 0 \leq l \leq 36 \end{array}$	$-13 \le h \le 13$ $-12 \le k \le 11$ $-25 \le 1 \le 25$	$\begin{array}{c} -13 \leq h \leq 13 \\ 0 \leq k \leq 12 \\ 0 \leq l \leq 25 \end{array}$	$\begin{array}{ll} -8 \leq h \leq 10 & -8 \leq h \leq 10 \\ -36 \leq k \leq 35 & -36 \leq k \leq 35 \\ -48 \leq l \leq 38 & -48 \leq l \leq 38 \end{array}$			
Indep. reflections	7501[R _{int}	= 0.0121]	4276[R _{in}	= 0.0251]	$19571[R_{int} = 0.0338]$			
Completeness	94.	9%	99	.0%	98.3%			
Data / restraints / parameters	7501/ 2/ 119	7501/ 154/ 334	4276/ 0/ 63	4276/ 80/ 207	18682/ 0/ 273	18682/361/747		
GOOF on F^2	1.113	0.989	1.139	0.928	1.001	1.036		
Final R indices [I>2sigma(I)]	$R_1 = 0.0134$ $wR_2 = 0.0399$		$R_1 = 0.0288$ w $R_2 = 0.1041$		$R_1 = 0.0308$ w $R_2 = 0.0796$			
R indices (all data)*	$R_1 = 0.0134$ $wR_2 = 0.0399$	$R_1 = 0.0063$ $wR_2 = 0.0139$	$R_1 = 0.0296$ w $R_2 = 0.1110$	$R_1 = 0.0107$ $wR_2 = 0.0241$	$R_1 = 0.0382$ $wR_2 = 0.0827$	$R_1 = 0.0215$ $wR_2 = 0.0307$		
Hooft/Parsons parameter	y = 0.003(5) z=0.005(4)	y =0.009(5)	-	-	y=0.07(10) z=0.09(12)	y =-0.03(7)		
Largest diff. peak and hole	0.41/-0.19 e.Å ⁻³	0.12/-0.09 e.Å ⁻³	0.61/-0.48 e.Å ⁻³	0.10/-0.10 e.Å ⁻³	0.57/-0.23 e.Å ⁻³	0.18/-0.16 e.Å ⁻³		
RBT (non H)	RBT (non H) 2.4 x 10 ⁻⁴			1.4 x 10 ⁻⁴		2.0 x 10 ⁻⁴		

* $I/\sigma(I)=0.1$ for the multipolar refinement.