

Supporting Information for

The Morita-Baylis-Hillman Reaction: ESI-MS(/MS) Investigation with Charge Tags and Ionic Liquid Effect

Origin Revealed by DFT Calculations

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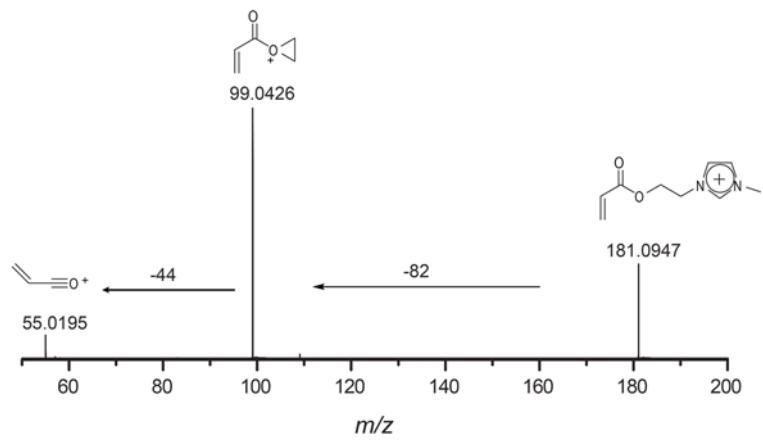


Figure S1. High-resolution ESI(+)-MS/MS of the charge-tagged acrylate derivative **11**.

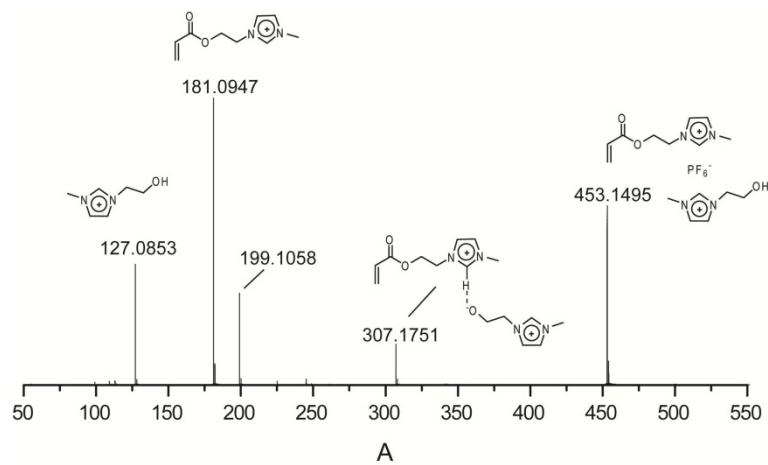


Figure S2. High-resolution ESI(+)-MS/MS of the ion of m/z 453.

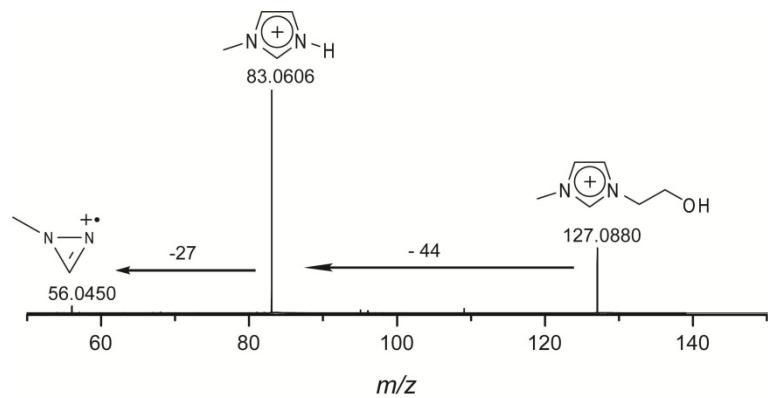


Figure S3. High-resolution ESI(+)-MS/MS of the charge-tagged alcohol.

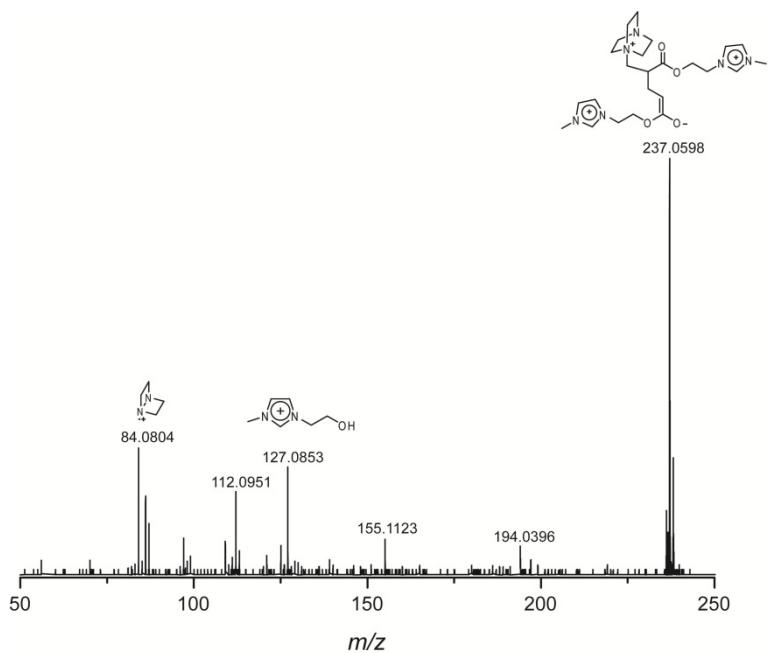


Figure S4. High-resolution ESI(+) MS/MS of the ion of m/z 237. Note it is a dicharged specie.

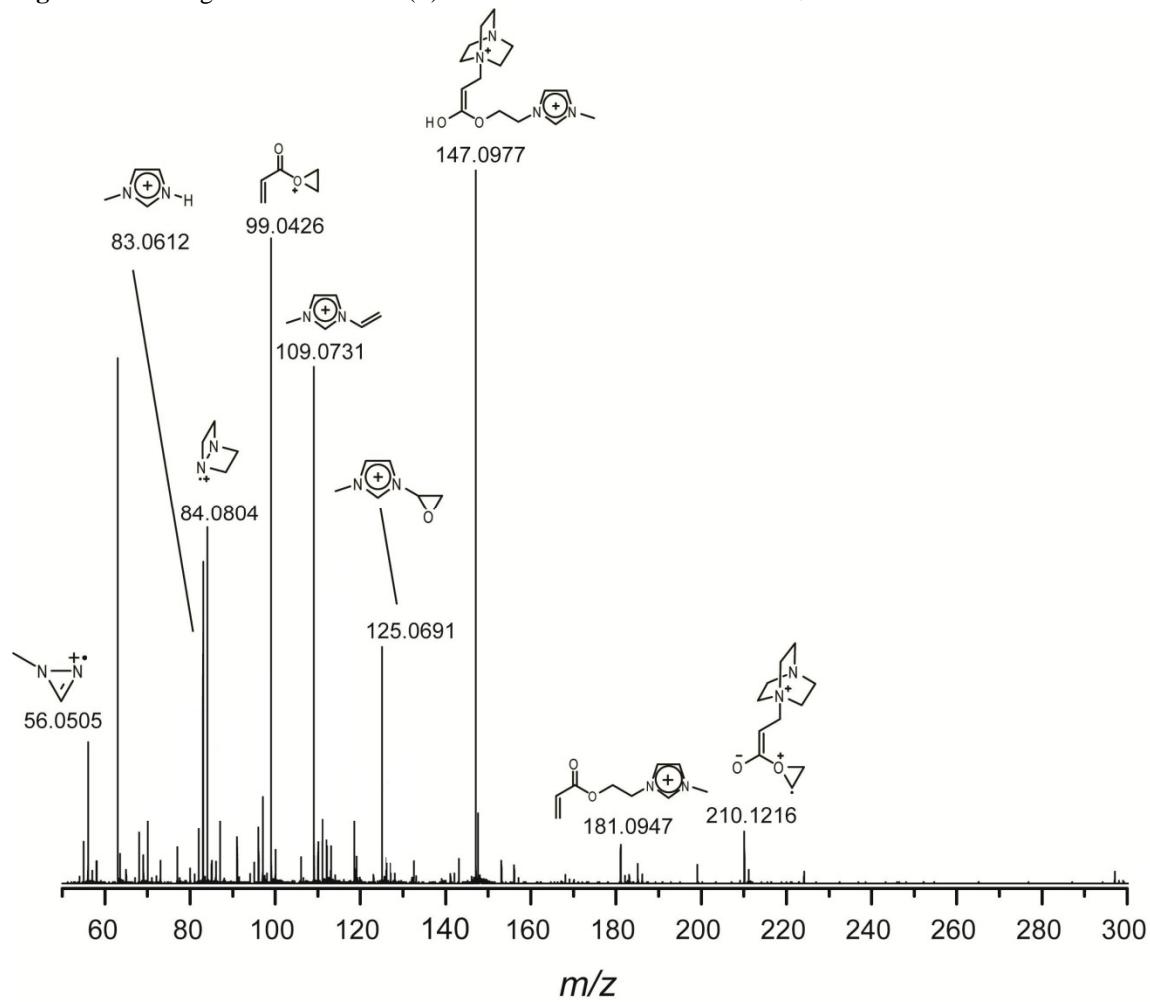


Figure S5. High-resolution ESI(+) MS/MS of the ion of m/z 147. Note it is a dicharged specie.

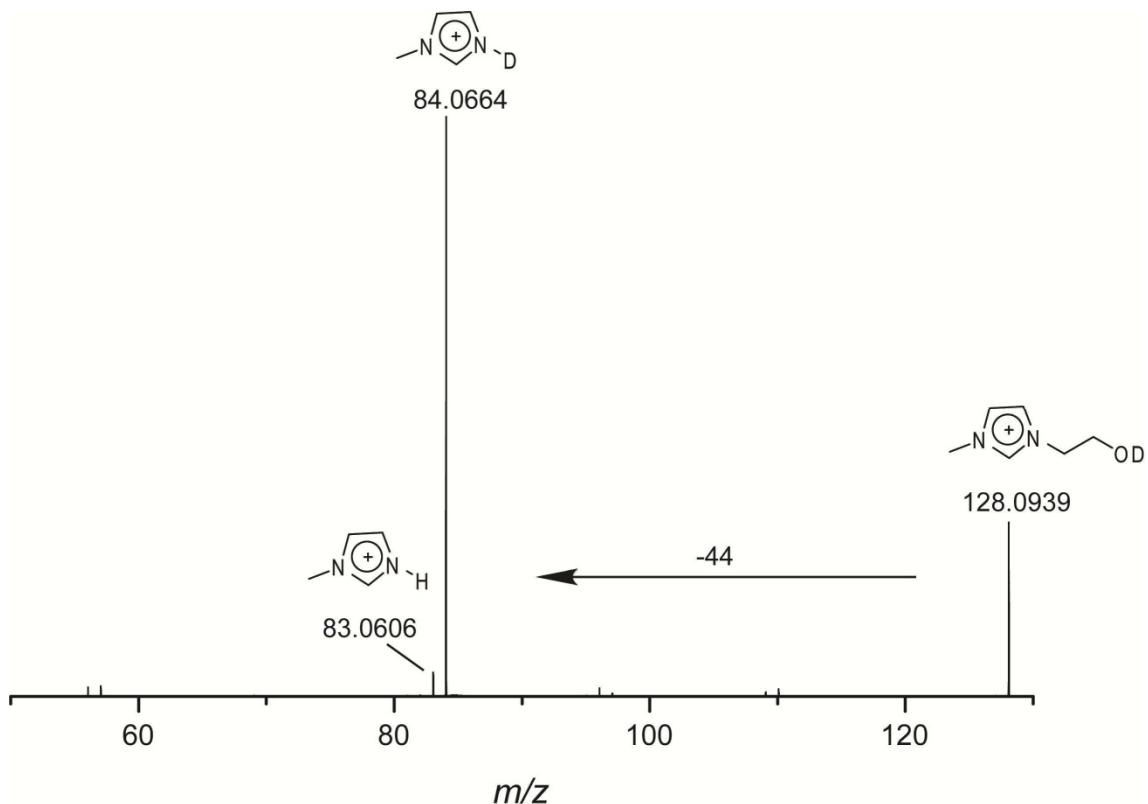
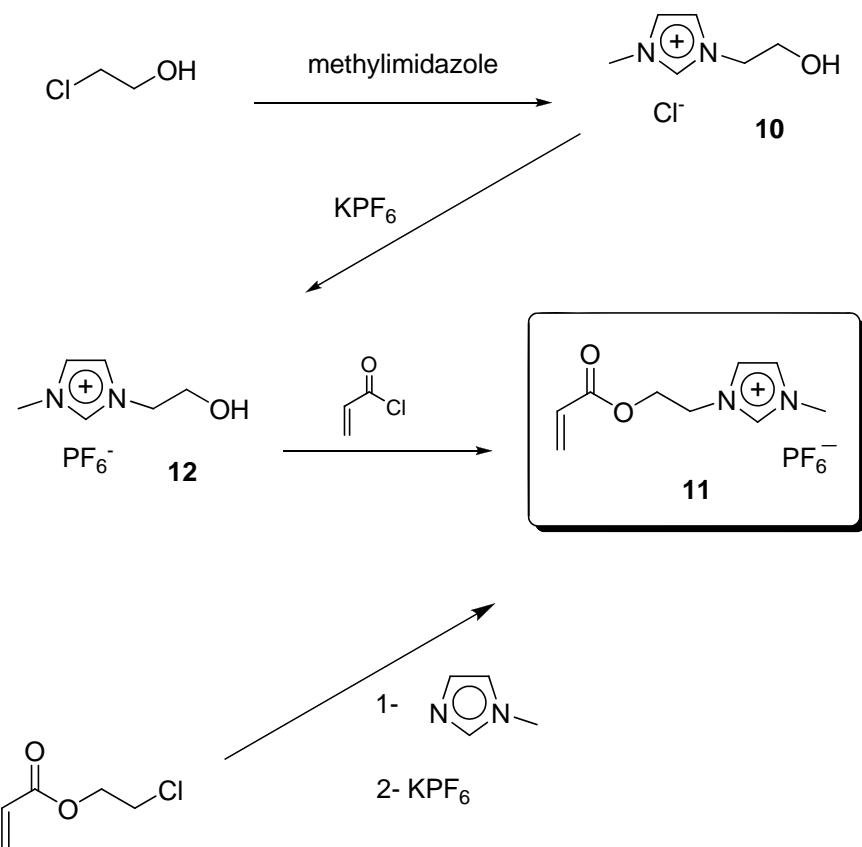
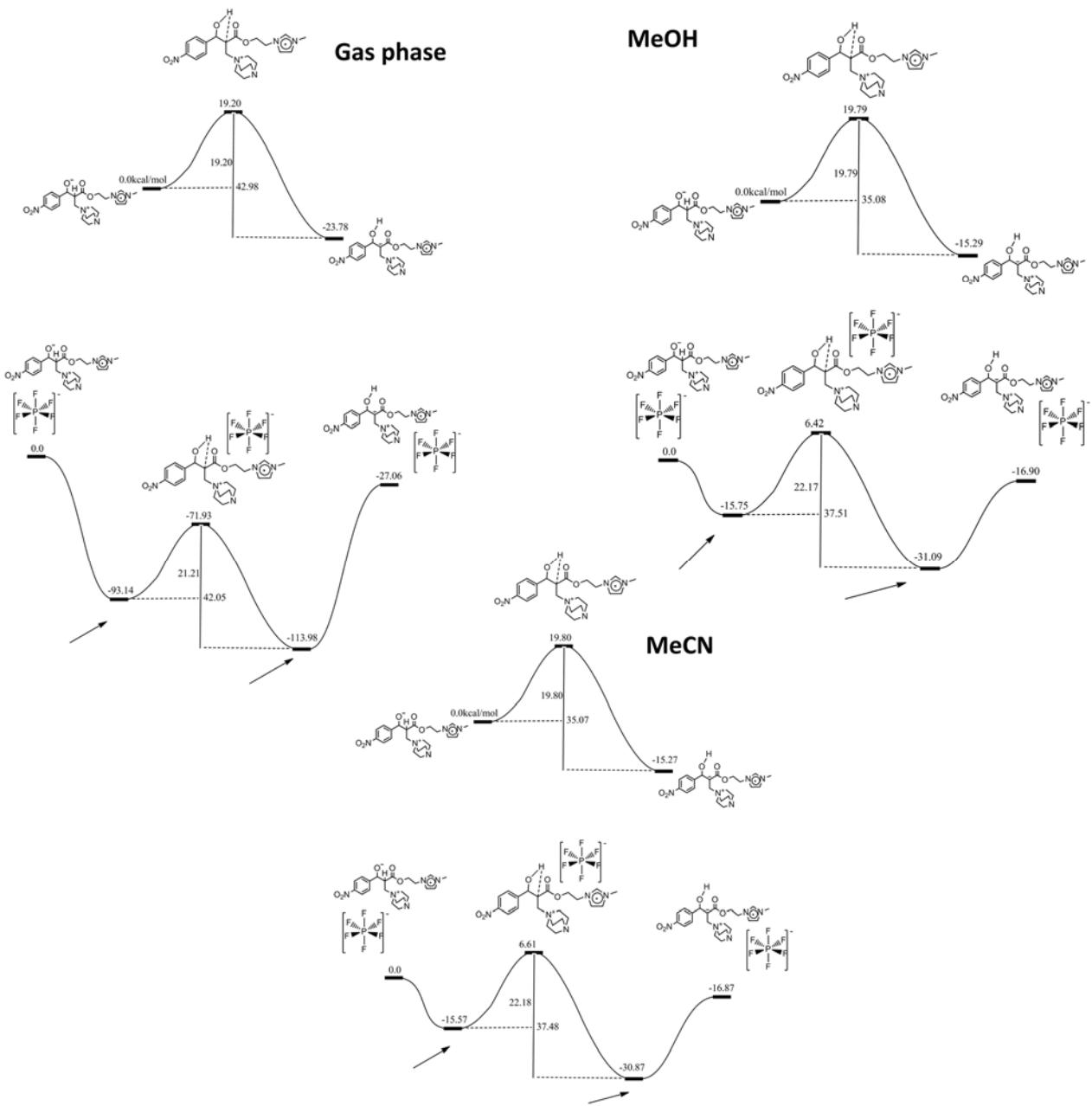


Figure S6. High-resolution ESI(+) -MS/MS of the charge-tagged deuterated alcohol.



Scheme S1. Synthesis of **11** and **12**.



Scheme S2. Direct (intramolecular) H-transfer. The arrows indicate the electrostatic intermediate complex formation observed as the ‘apparent negative activation energy’ in the intrinsic reaction coordinate.

Cartesian coordinates (Angstroms and Degrees), energy (Hartree) and thermal corrections for all the calculated structures at M062X/6-311G(d,p) level. It was regarded for calculate the thermodynamics correction terms, a temperature at 295.15K.

[PF₆]⁻ - Gas phase



69	6	0	2.465240	2.738566	-1.925026
70	6	0	1.761583	1.891270	-1.941414
71	7	0	5.300900	3.073631	-1.752870
72	8	0	6.383986	2.557772	-1.590199
73	8	0	5.100955	4.260220	-1.875038
74	1	0	0.766635	2.309301	-2.042469
75	1	0	2.764284	3.812546	-2.009622
76	1	0	5.332000	0.741616	-1.663138
77	1	0	3.218816	-1.084794	-0.527001
78	1	0	0.430111	-0.606577	-2.870884

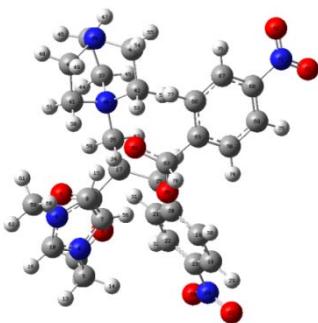
Structure 14 - Gas phase

Zero-point correction= 0.019664
Thermal correction to Energy= 0.025645
Thermal correction to Enthalpy= 0.026589
Thermal correction to Gibbs Free Energy= -0.007414
Sum of electronic and zero-point Energies= -940.636435
Sum of electronic and thermal Energies= -940.630453
Sum of electronic and thermal Enthalpies= -940.629509
Sum of electronic and thermal Free Energies= -940.663513

Standard orientation:

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	15	0	0.000000	0.000000	0.000000
2	9	0	0.000000	0.000000	1.630000
3	9	0	0.000000	1.630000	0.000000
4	9	0	1.630000	0.000000	0.000000
5	9	0	0.000000	0.000000	-1.630000
6	9	0	1.630000	0.000000	0.000000
7	9	0	0.000000	-1.630000	0.000000

Structure 13 - Gas phase

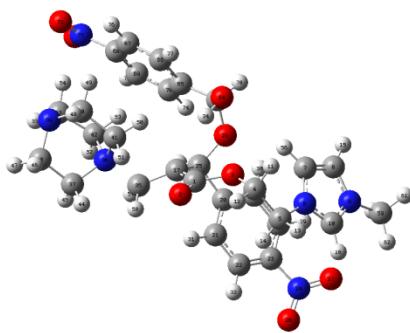


Zero-point correction= 0.642124
Thermal correction to Energy= 0.679199
Thermal correction to Enthalpy= 0.680143
Thermal correction to Gibbs Free Energy= 0.567779
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Sum of electronic and thermal Energies= -2055.022241
Sum of electronic and thermal Enthalpies= -2055.021296
Sum of electronic and thermal Free Energies= -2055.133660

Standard orientation:

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	6	0	1.384424	0.498599	1.809808
2	8	0	1.578577	0.758296	2.975122
3	8	0	2.251432	0.889656	0.841492
4	6	0	3.382150	1.640142	1.250837
5	6	0	4.008186	2.149995	-0.030108
6	7	0	3.200578	3.214121	-0.658223
7	6	0	1.852051	3.715151	-0.161616
8	6	0	2.542760	4.391204	-1.483921
9	7	0	2.731661	5.048130	-1.710819
10	6	0	3.717233	4.316109	-1.200809
11	1	0	3.085638	2.453335	1.917868
12	1	0	4.093137	0.999691	1.778277
13	1	0	4.994102	2.571410	0.166607
14	1	0	4.112015	1.120152	-0.163349
15	1	0	0.595156	4.792414	-1.804401
16	1	0	4.764016	4.573465	1.224168
17	6	0	0.204748	-0.154067	1.230558
18	6	0	3.402885	-2.892477	-1.389702
19	6	0	2.311282	-2.036264	-1.338182
20	6	0	1.625594	-1.828458	-0.140595
21	6	0	2.050240	-2.494643	0.01034
22	6	0	3.121242	-3.192441	0.055446
23	6	0	3.795059	-3.538053	-0.228760
24	7	0	4.964363	-4.442283	-0.272348
25	6	0	0.413618	-0.910413	-0.105549
26	8	0	0.518025	-0.040205	-1.214823
27	8	0	5.540201	-4.552549	-1.330574
28	8	0	5.268400	-5.055290	0.754549
29	1	0	3.936444	-3.060215	-0.163345
30	1	0	1.989707	-1.510767	2.236895
31	1	0	1.547048	-2.336926	1.958024
32	1	0	3.478821	-3.883942	1.856380
33	1	0	-0.482341	-1.540743	-0.234477
34	1	0	-0.372380	0.836269	0.676723
35	6	0	-0.359309	-0.929266	2.278090
36	7	0	-1.191309	-0.192456	0.085855
37	6	0	2.496162	-0.890300	3.857601
38	6	0	3.924133	-0.332660	4.083816
39	7	0	-4.095158	0.922646	3.358080
40	6	0	-2.969120	1.801844	3.669479
41	6	0	-1.664957	1.259021	3.035718
42	6	0	-2.884724	0.232324	1.536385
43	6	0	-1.112042	0.712324	1.220237
44	1	0	-1.823407	-0.659540	4.701086
45	1	0	-2.489614	-1.960006	3.644618
46	1	0	-4.094781	-0.165760	5.147762
47	1	0	-4.767530	-1.040351	3.731838
48	1	0	-2.879315	1.872461	4.755008
49	1	0	-3.174626	2.801954	3.286591
50	1	0	-1.422932	1.203560	2.10040
51	1	0	-0.302152	1.262017	0.598446
52	1	0	-3.147133	-1.282417	1.388326
53	1	0	-2.375761	0.147770	0.654304
54	1	0	-4.065854	1.593540	1.385415
55	1	0	-5.028721	0.139286	1.651103
56	1	0	1.151035	2.464436	-0.474845
57	1	0	-0.590150	-1.875225	1.948603
58	1	0	-0.943215	0.163394	0.939449
59	6	0	2.880750	6.333383	-2.395212
60	1	0	2.338789	7.100193	-1.844485
61	1	0	3.936784	6.590608	-2.435603
62	1	0	2.487202	6.247762	-3.406523
63	6	0	-0.557245	0.907903	-1.395432
64	8	0	-0.753722	1.616182	-0.291565
65	6	0	-1.162024	0.170209	-1.113133
66	6	0	3.055440	0.938808	1.668325
67	6	0	-4.240191	0.242791	-2.075429
68	6	0	-4.173300	-1.002918	-2.682089
69	6	0	-2.973015	-1.655236	-2.913244
70	6	0	-1.796084	-1.039778	-2.503653
71	7	0	-5.432782	-1.659730	-3.096446
72	8	0	-6.452359	-2.723836	-3.654137
73	8	0	-0.842405	-1.527112	-2.672627
74	1	0	-2.976903	-2.619775	-3.402851
75	1	0	-5.203382	0.715612	-1.936503
76	1	0	-3.058968	1.805007	-1.176874
77	1	0	-0.185792	1.499705	-2.249199

Structure 15 - Gas phase



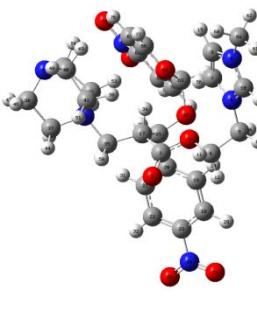
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 Sum of electronic and thermal Energies= -2055.043692
 Sum of electronic and thermal Enthalpies= -2055.042748
 Sum of electronic and thermal Free Energies= -2055.151023

Standard orientation:

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	6	0	0.342582	1.676278	-1.043221
2	8	0	0.163620	2.831131	-1.403001
3	8	0	1.351665	0.914750	-1.623397
4	6	0	2.274226	1.101181	-2.704782
5	6	0	3.636040	1.527572	-1.807232
6	7	0	4.092398	0.136838	-1.583474
7	6	0	3.400410	-1.032870	-1.825000
8	6	0	4.240375	-2.053509	-1.507543
9	7	0	5.420246	-1.495067	-1.067772
10	6	0	5.302881	-0.173799	-1.393774
11	1	0	2.324226	1.103115	-3.437978
12	1	0	1.978240	2.607642	-2.526014
13	1	0	4.380185	2.024502	-2.418158
14	1	0	3.583640	2.016620	-0.832330
15	1	0	4.094416	-3.119478	-1.541318
16	1	0	6.070243	0.529059	-0.835436
17	6	0	-0.383922	0.937528	-0.176552
18	6	0	3.730281	-1.003000	1.706199
19	6	0	2.481619	1.381542	1.308678
20	6	0	1.630624	-0.085503	1.128280
21	6	0	2.092631	1.185563	1.472150
22	6	0	3.400960	1.383225	1.899121
23	6	0	4.242608	0.285318	1.957163
24	7	0	5.671354	0.500714	2.222000
25	6	0	0.229249	-0.293000	0.558669
26	8	0	0.394822	-1.479664	0.52642
27	8	0	6.442467	-0.336048	1.776205
28	8	0	5.998666	1.496216	2.815535
29	1	0	4.480150	-1.837325	1.803346
30	1	0	2.118765	-2.174068	1.080579
31	1	0	1.442859	2.045364	1.359941
32	1	0	3.703440	2.035265	2.148882
33	1	0	4.283559	0.570025	1.393009
34	1	0	-0.618739	-0.224469	-2.139390
35	6	0	-1.213330	1.820050	0.775467
36	7	0	-2.725801	1.999940	0.411443
37	6	0	-3.222890	3.278652	1.018671
38	6	0	-4.697417	3.500948	0.584692
39	7	0	-5.334040	2.103000	-1.351515
40	6	0	-4.446665	2.345505	-1.161651
41	6	0	-2.921094	2.071491	-1.075497
42	6	0	-3.539406	0.864767	0.957062
43	6	0	-5.044152	1.150962	0.695924
44	1	0	-2.565892	4.075415	0.669999
45	1	0	-3.109757	3.178774	2.100164
46	1	0	-4.771165	4.3711893	-0.068071
47	1	0	-5.302881	3.278652	1.018671
48	1	0	4.646286	3.004088	-2.042455
49	1	0	-4.791730	1.255323	-1.857793
50	1	0	-2.468566	1.169318	-1.484322
51	1	0	-2.344171	2.929653	-1.422513
52	1	0	-3.313555	0.789287	2.021875
53	1	0	-3.103180	-0.031369	0.457047
54	1	0	-5.517739	0.03153	1.198133
55	1	0	-5.570734	1.215609	1.307446
56	1	0	2.365402	-1.038995	-1.327277
57	1	0	-1.245231	1.503401	1.821722
58	1	0	-0.843796	2.847269	0.722632
59	6	0	6.593963	-2.229259	-0.591639
60	1	0	6.320280	-2.808299	0.288747
61	1	0	6.980018	-2.032014	-1.617757
62	1	0	7.362825	-1.514338	-0.311491
63	6	0	-0.559421	-1.887430	-1.206937
64	8	0	-0.504325	-1.149920	-2.388692
65	6	0	-1.967455	-2.011099	-0.647103
66	6	0	-3.071721	-1.756246	-1.461684
67	6	0	-4.360041	-1.936588	-0.974571
68	6	0	-4.515359	-2.348200	0.348224
69	6	0	-3.101556	-2.691414	1.469525
70	6	0	-2.157817	-2.502391	0.645759
71	7	0	-5.882798	-2.524441	0.871760
72	8	0	-6.779181	-2.002483	0.243793
73	8	0	-6.010526	-3.129351	1.909202
74	1	0	-1.295997	-2.743897	1.257522
75	1	0	-3.617420	-1.742521	0.580919
76	1	0	-5.232003	-1.742521	-1.580919
77	1	0	-2.911469	-1.429363	-2.481633
78	1	0	-0.237667	-2.895494	-1.484068

5 9 0 0.000000 0.000000 -1.622353
 6 9 0 0 -1.622353 0.000000 0.000000
 7 9 0 0 0.000000 -1.622353 0.000000

Structure 13 - Solvent: Methanol



Zero-point correction= 0.646438
 Thermal correction to Energy= 0.684226
 Thermal correction to Enthalpy= 0.688170
 Thermal correction to Gibbs Free Energy= 0.570334
 Sum of electronic and zero-point Energies= -2055.156707
 Sum of electronic and thermal Energies= -2055.118919
 Sum of electronic and thermal Enthalpies= -2055.117974
 Sum of electronic and thermal Free Energies= -2055.232811

[PF6]- Solvent: Methanol



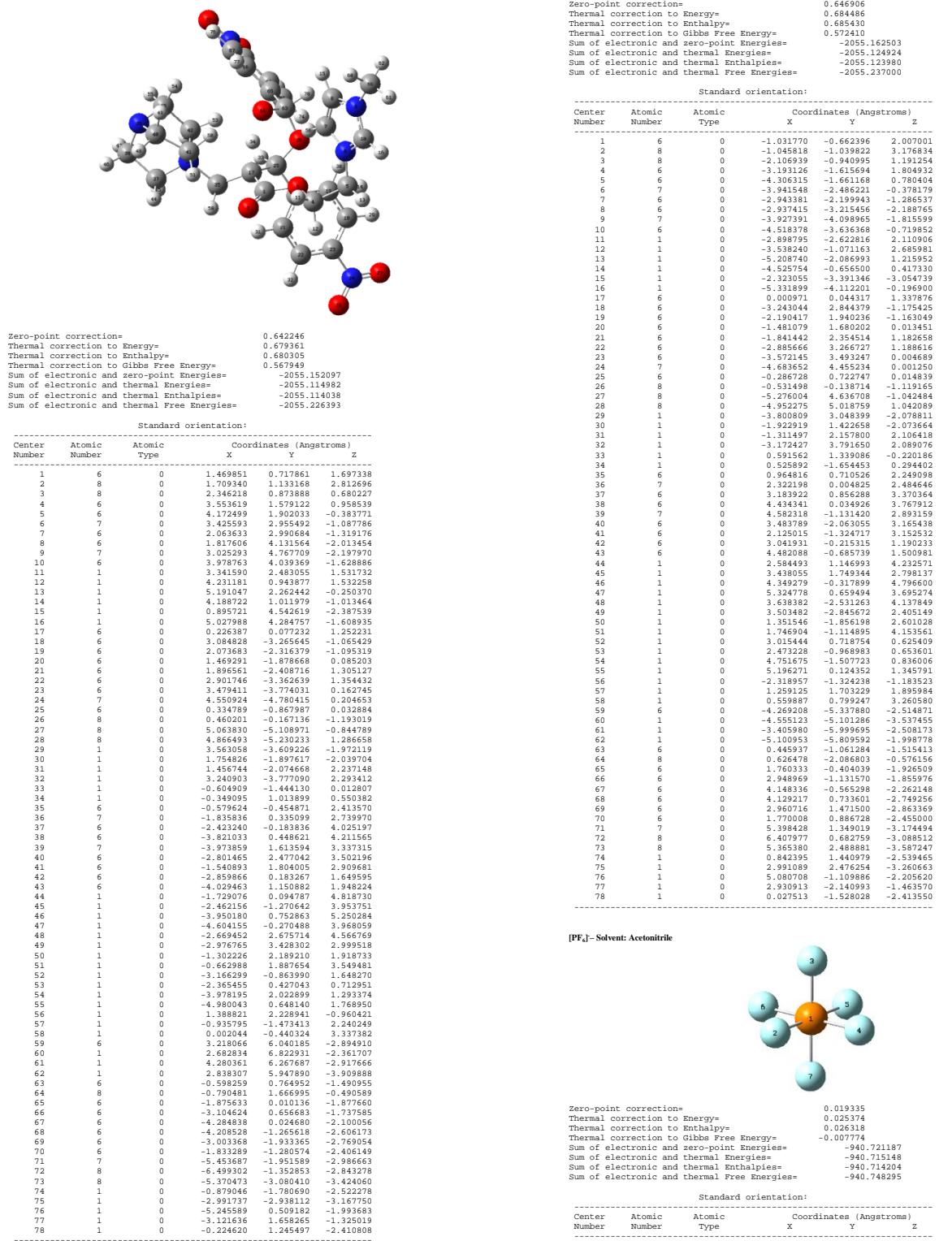
Zero-point correction= 0.019332
 Thermal correction to Energy= 0.025373
 Thermal correction to Enthalpy= 0.026317
 Thermal correction to Gibbs Free Energy= -0.007620
 Sum of electronic and zero-point Energies= -940.720957
 Sum of electronic and thermal Energies= -940.714916
 Sum of electronic and thermal Enthalpies= -940.713972
 Sum of electronic and thermal Free Energies= -940.748067

Standard orientation:

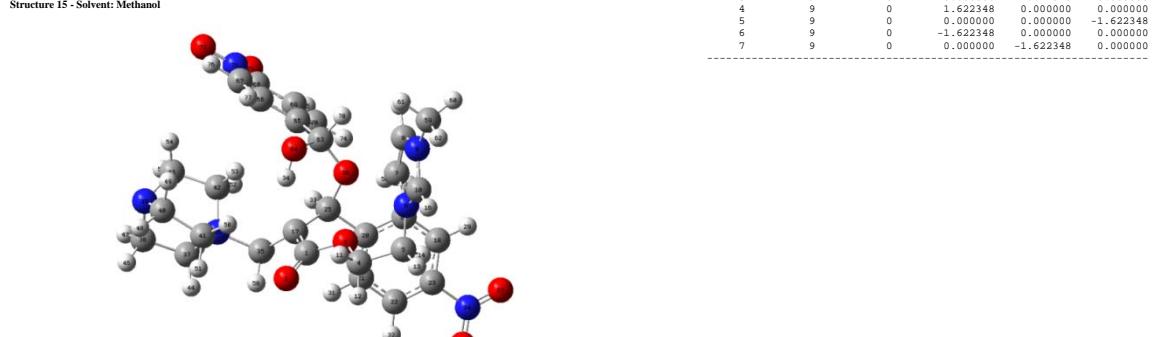
Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	15	0	0.000000	0.000000	0.000000
2	9	0	0.000000	0.000000	1.622353
3	9	0	0.000000	1.622353	0.000000
4	9	0	1.622353	0.000000	0.000000

5 7 0 0.000000 0.000000 -1.622353
 6 7 0 0 -1.622353 0.000000 0.000000
 7 7 0 0 0.000000 -1.622353 0.000000

Structure 14 - Solvent: Methanol



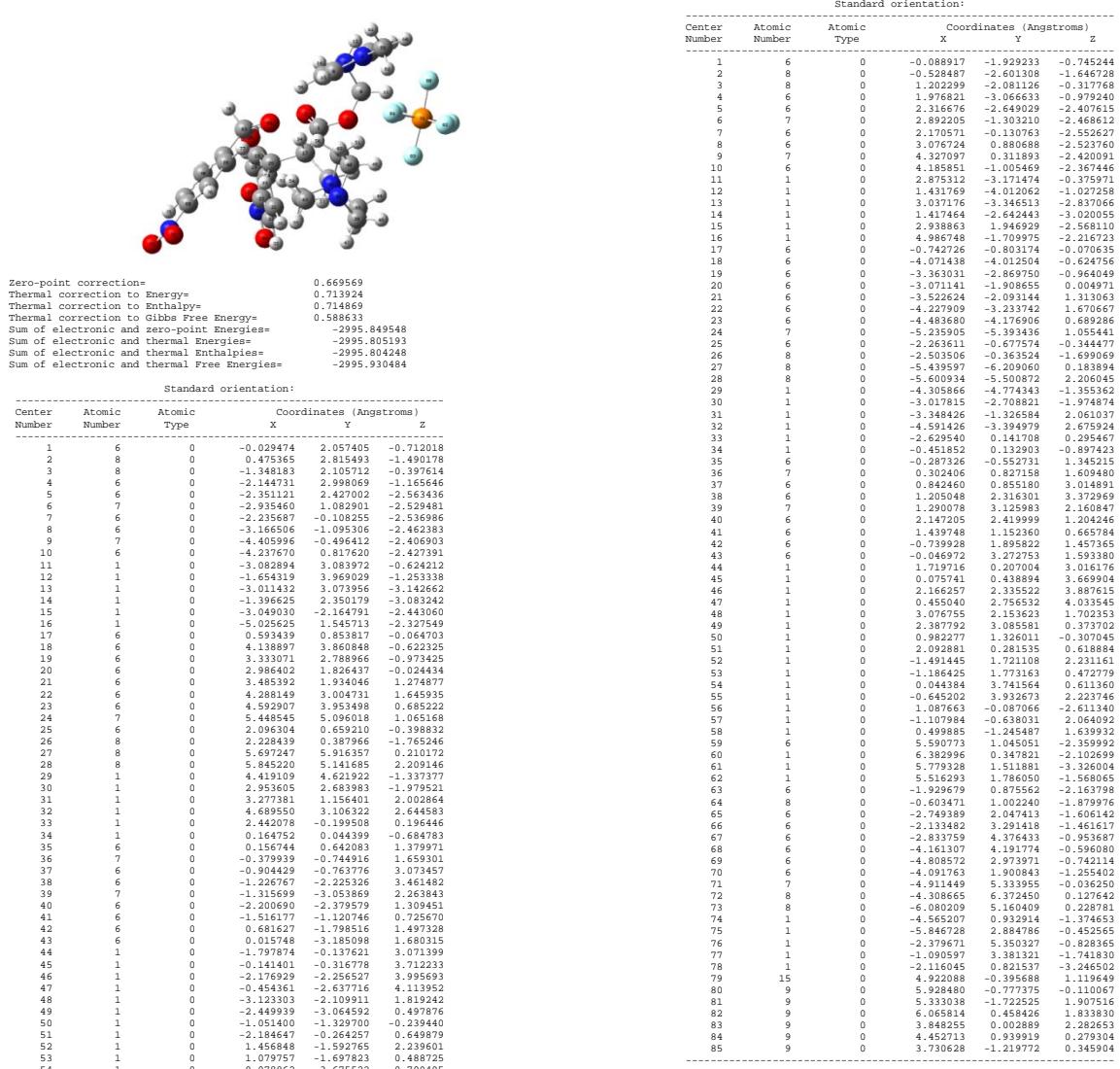
Structure 15 - Solvent: Methanol



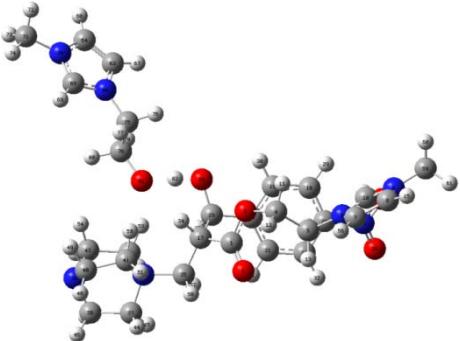
Structure 17 – Gas phase

30	1	0	-1.924510	1.416499	-2.074382
31	1	0	-1.310195	2.162225	2.103397
32	1	0	-3.172288	3.794734	2.083605
33	1	0	0.591645	1.339798	-0.221505
34	1	0	0.527202	-1.124569	0.105669
35	6	0	0.965913	0.714396	2.248813
36	7	0	2.323661	0.009521	2.484567
37	6	0	3.185193	0.861993	3.369495
38	6	0	4.435987	0.041423	3.767422
39	7	0	4.584412	-1.125422	2.893355
40	6	0	3.486326	-2.057406	3.166347
41	6	0	2.121362	-1.152763	3.793236
42	6	0	3.043220	-0.211212	1.190148
43	6	0	4.483700	-0.680596	1.500918
44	1	0	2.585811	1.153062	4.231607
45	1	0	3.438900	1.754724	2.796589
46	1	0	4.351186	-0.310808	4.796335
47	1	0	5.326128	0.666353	3.694885
48	1	0	3.641182	-2.125283	3.413440
49	1	0	3.506156	-2.403273	2.405419
50	1	0	1.353823	-1.851790	2.602549
51	1	0	1.749459	-1.109277	4.154456
52	1	0	3.016086	0.722411	0.624626
53	1	0	2.474882	-0.965678	0.654254
54	1	0	4.753634	-1.502781	0.836330
55	1	0	5.197378	0.129823	1.345142
56	1	0	-2.311202	-1.162762	3.171772
57	1	0	1.359665	1.706810	1.894431
58	1	0	0.561366	0.804092	3.260351
59	6	0	-4.274591	-5.335565	-2.511051
60	1	0	-4.562649	-0.998228	-3.532856
61	1	0	-3.411430	-5.997476	-2.506602
62	1	0	-5.105181	-5.891261	-1.993498
63	6	0	0.446630	-1.964266	-1.169395
64	8	0	0.627677	-2.087819	-0.570981
65	6	0	1.760789	-0.407754	-1.925349
66	6	0	2.949405	-1.135307	-1.854308
67	6	0	4.148549	-0.569897	-2.262296
68	6	0	4.129273	0.728197	-2.751580
69	6	0	2.960794	1.466054	-2.866117
70	6	0	1.777702	0.930263	-2.454944
71	7	0	5.398242	1.342705	-3.498712
72	8	0	6.407558	0.675932	-3.053802
73	8	0	5.365347	2.482401	-3.591980
74	1	0	0.842661	1.436283	-2.540921
75	1	0	2.991016	2.470161	-3.265056
76	1	0	5.080893	-1.114496	-2.205443
77	1	0	2.931507	-2.144010	-1.460021
78	1	0	0.027965	-1.533012	-2.409262

Structure 16 – Gas phase



Structure 21 – Solvent: Acetonitrile

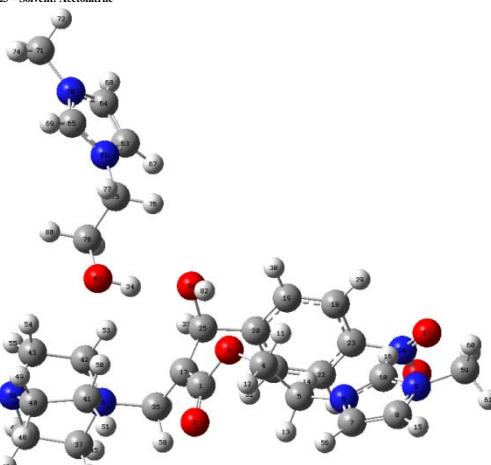


Zero-point corrections= 0.704200
 Thermal correction to Energy= 0.743130
 Thermal correction to Enthalpy= 0.744074
 Thermal correction to Gibbs Free Energy= 0.626525
 Sum of electronic and zero-point Energies= -1924.850238
 Sum of electronic and thermal Energies= -1924.811308
 Sum of electronic and thermal Enthalpies= -1924.810364
 Sum of electronic and thermal Free Energies= -1924.9027912

Standard orientation:

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	6	0	0.540207	1.022559	-0.760544
2	8	0	0.636275	2.026093	1.280757
3	8	0	1.033863	-0.203740	-1.121066
4	6	0	2.155122	-0.202886	-1.999682
5	6	0	3.365422	0.445090	-1.314554
6	7	0	4.621376	-0.095440	-1.837324
7	6	0	5.135216	0.119358	-3.098223
8	6	0	5.632498	-0.082598	-3.161896
9	7	0	6.482367	-1.186368	1.352406
10	6	0	5.453540	-0.889805	-1.166978
11	1	0	2.358315	-1.253649	-2.200676
12	1	0	1.904656	0.311604	-2.298308
13	1	0	3.373728	1.524281	-1.447302
14	1	0	3.334891	0.221836	-0.247173
15	1	0	7.030245	0.666486	-3.179185
16	1	0	5.530055	-1.045449	-0.146021
17	6	0	-0.501222	0.882740	2.276497
18	6	0	3.264766	-1.686449	1.767603
19	6	0	1.919591	-1.588444	1.458144
20	6	0	1.214701	-0.404676	1.691255
21	6	0	1.875438	0.674897	2.285687
22	6	0	3.126245	0.191816	-0.001077
23	6	0	3.893541	-0.597182	2.337515
24	7	0	5.222970	-0.669436	2.630168
25	6	0	-0.246589	-0.272564	1.281746
26	8	0	-0.717902	-1.518265	0.804724
27	8	0	5.980342	-1.498178	2.016856
28	8	0	5.790849	0.090229	3.449054
29	1	0	3.821517	-2.595011	1.578561
30	1	0	1.192167	-2.276994	1.180915
31	1	0	1.344964	0.589877	2.486541
32	1	0	3.742425	1.420801	3.079254
33	1	0	-0.813454	-0.024092	2.189570
34	1	0	-1.491681	0.365463	-0.418815
35	6	0	-0.793707	2.231356	0.901952
36	7	0	-2.035035	2.937839	0.375934
37	6	0	-2.132060	4.102097	0.207078
38	6	0	3.422802	4.980298	0.551658
39	7	0	-4.120529	4.181268	-0.446144
40	6	0	-3.204484	3.933647	-1.561873
41	6	0	-2.066619	2.978497	-1.132863
42	6	0	-3.282701	2.262187	0.869603
43	6	0	-4.494533	2.896436	0.146817
44	1	0	-1.204213	4.211213	0.199393
45	1	0	1.839477	4.323830	1.955016
46	1	0	-3.285141	5.996125	0.190607
47	1	0	-4.042934	5.026243	1.457185
48	1	0	-2.802277	4.891723	-1.894015
49	1	0	-3.755400	3.491684	-2.392445
50	1	0	-2.239088	1.954883	-1.467943
51	1	0	-1.083469	3.740699	-1.465719
52	1	0	3.323892	3.412734	-0.146446
53	1	0	-3.183355	1.190908	0.668633
54	1	0	-4.853944	2.242846	-0.648309
55	1	0	-5.307679	3.043834	0.859992
56	1	0	4.637327	0.743367	-3.820363
57	1	0	-0.964778	2.151294	1.977043
58	6	0	0.414527	2.929159	-0.447436
59	6	0	7.619222	-2.028613	-1.350202
60	1	0	7.606700	-2.937064	-2.172358
61	1	0	8.539462	-1.475059	-1.746074
62	1	0	7.527178	-2.274216	-0.519167
63	6	0	-4.868856	-3.442512	0.788570
64	6	0	-6.146507	3.832751	1.031133
65	6	0	-6.072452	-2.923202	-0.988015
66	7	0	-4.145427	-2.909159	-0.447436
67	1	0	-3.983415	-3.500507	1.395664
68	1	0	-6.594248	-4.300036	1.890844
69	1	0	-6.362417	-2.621422	-1.968155
70	7	0	-6.880078	-3.524677	-0.092890
71	6	0	-8.308620	-3.787218	-0.273839
72	1	0	-8.482233	4.860183	-0.231290
73	1	0	-8.393540	3.422200	-0.231290
74	1	0	-8.611148	-3.401215	-1.243441
75	6	0	-3.672784	-2.297074	-1.118838
76	1	0	-2.816574	-2.943042	-0.922510
77	1	0	-3.849697	-2.264801	-2.193005
78	6	0	-3.408619	-0.889400	-0.574795
79	1	0	-3.326360	0.971627	0.525315
80	1	0	-4.145427	-0.747436	0.525315
81	8	0	-2.355892	-0.395714	-1.160193
82	1	0	-1.111682	-1.362698	-0.073443

Structure 23 – Solvent: Acetonitrile

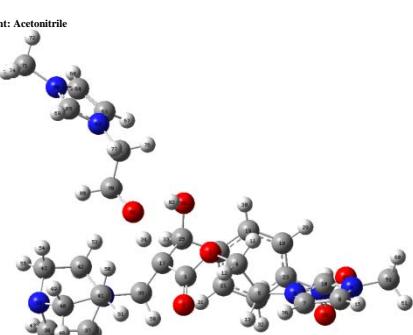


Zero-point corrections= 0.702344
 Thermal correction to Energy= 0.746248
 Thermal correction to Enthalpy= 0.747192
 Thermal correction to Gibbs Free Energy= 0.631713
 Sum of electronic and zero-point Energies= -1924.852646
 Sum of electronic and thermal Energies= -1924.817342
 Sum of electronic and thermal Enthalpies= -1924.816397
 Sum of electronic and thermal Free Energies= -1924.931877

Standard orientation:

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	6	0	0.784656	1.633949	-0.747608
2	8	0	1.210571	2.738064	-1.244745
3	8	0	1.172342	0.466857	-1.324199
4	6	0	2.411304	0.461664	-2.005265
5	6	0	3.539271	0.750422	-1.008805
6	7	0	4.833325	0.285734	-1.510895
7	6	0	5.567961	0.852303	-2.526549
8	6	0	6.284300	0.093255	-2.686698
9	7	0	6.605697	-0.920481	-1.751902

Structure 22 – Solvent: Acetonitrile

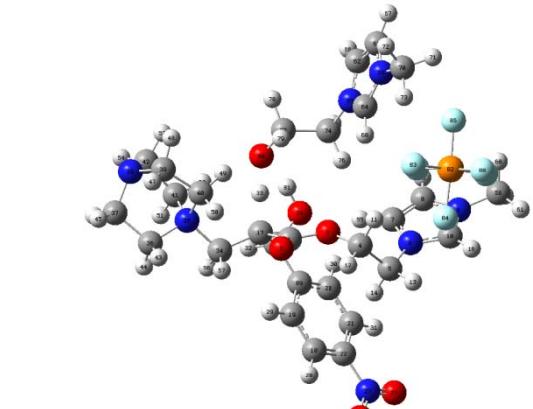


Zero-point correction= 0.702413
 Thermal correction to Energy= 0.739819

88 9 0 5.442801 -0.488399 -2.283177
89 6 0 -2.276976 2.297361 0.706174

Structure 27 – Gas Phase

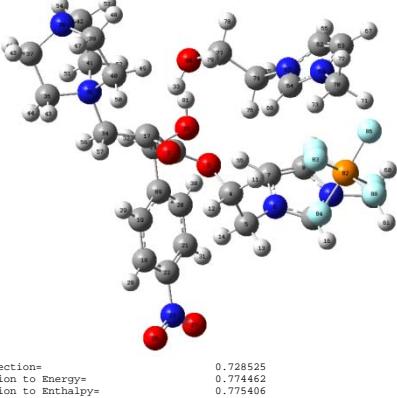
Structure 26 – Gas Phase



Zero-point correction= 0.725035
Thermal correction to Energy= 0.769984
Thermal correction to Enthalpy= 0.770928
Thermal correction to Gibbs Free Energy= 0.645479
Sum of electronic and zero-point Energies= -2865.513455
Sum of electronic and thermal Energies= -2865.467807
Sum of electronic and thermal Enthalpies= -2865.467563
Sum of electronic and thermal Free Energies= -2865.593012

Standard orientation:

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	6	0	-1.657755	0.181343	-0.988416
2	8	0	-1.865580	-0.066321	-0.153778
3	8	0	-0.421314	0.493775	-0.522517
4	6	0	0.584375	0.851792	-1.476626
5	6	0	1.229010	2.141339	-1.001249
6	7	0	1.994975	1.961759	0.238552
7	6	0	1.512319	0.974473	1.446787
8	6	0	2.576270	1.410493	2.326280
9	7	0	3.687190	1.834968	1.576697
10	6	0	3.306965	2.148568	0.345943
11	1	0	1.318495	0.051600	-1.547593
12	1	0	0.125621	1.010546	-2.452696
13	1	0	1.928326	2.494402	-1.758692
14	1	0	0.468330	2.392260	-0.824422
15	1	0	2.645337	1.109051	3.005355
16	1	0	3.963832	2.448173	-0.452838
17	6	0	-2.652860	0.144062	0.099967
18	6	0	-2.031012	4.334234	-0.861598
19	6	0	-2.412405	3.063188	-0.452089
20	6	0	-1.251572	3.363119	0.634203
21	6	0	-0.850000	1.632000	1.239391
22	6	0	-1.242493	0.516172	-0.027073
23	7	0	-0.801495	6.433201	-0.449244
24	6	0	-2.426123	1.160501	1.241361
25	8	0	-1.470764	0.718153	2.188833
26	8	0	-1.184129	6.815299	-1.531055
27	8	0	-0.081437	7.051470	0.301010
28	1	0	-2.322074	4.373764	-1.821745
29	1	0	-3.665339	2.324602	-1.311000
30	1	0	-0.961020	2.981969	2.604430
31	1	0	-0.248568	5.266621	1.873682
32	1	0	-3.395122	1.266895	1.754149
33	1	0	-2.342001	-0.962422	0.745569
34	6	0	-4.058495	0.151430	-0.453629
35	7	0	-4.800902	-1.176085	-0.383952
36	6	0	-6.162000	-1.942466	-1.19436
37	6	0	-5.948743	2.324543	-0.000606
38	7	0	-6.101979	-3.377731	-0.322212
39	6	0	-4.925281	-3.513299	-1.180775
40	6	0	-4.002480	-2.280582	-1.031957
41	6	0	-5.097785	-1.567803	1.040479
42	6	0	-5.667724	-3.007094	1.024512
43	1	0	-5.858500	0.0	2.914422
44	1	0	-5.681738	0.132903	-0.764658
45	1	0	-7.415116	-2.651434	-1.782687
46	1	0	-7.743633	-2.113112	-0.136301
47	1	0	-5.264674	-3.628918	-2.211664
48	1	0	-4.380253	-4.417126	-0.906624
49	1	0	-3.169543	-2.475645	-0.359252
50	1	0	-3.615570	-1.894600	-1.772229
51	1	0	-5.165157	-0.902026	1.41661
52	1	0	-4.165715	-1.513665	1.601814
53	1	0	-4.902059	-3.714498	1.348358
54	1	0	-6.510071	-3.085342	1.712749
55	1	0	0.469986	1.253650	1.599527
56	1	0	-4.702595	0.852048	0.084569
57	1	0	-4.060536	0.449130	-1.51866
58	6	0	5.663398	1.320105	2.760005
59	1	0	5.128661	2.375588	2.994049
60	1	0	5.382951	0.788321	2.191956
61	1	0	5.701509	2.286725	1.310927
62	6	0	1.941193	-4.079078	2.081892
63	6	0	2.834956	-4.809960	1.366584
64	6	0	1.975414	-3.192550	0.304933
65	7	0	1.424824	-3.024562	-1.18523
66	1	0	1.627778	4.142824	3.112679
67	1	0	3.468939	-5.630872	1.653874
68	1	0	1.795148	-2.678340	-0.836060
69	7	0	2.834564	-4.303680	0.086295
70	6	0	3.694712	-4.743669	-0.105256
71	1	0	4.731400	-4.685101	-0.691781
72	1	0	3.422100	-5.204124	-1.290005
73	1	0	3.532277	1.050700	-1.18523
74	6	0	0.370866	-2.156908	1.540616
75	1	0	0.612973	-1.906245	2.467144
76	1	0	0.442177	-1.270419	0.824944
77	6	0	-1.004003	-2.820092	1.343566
78	1	0	-1.172834	-3.179857	0.304636
79	9	0	-2.012022	-1.944163	1.779539
80	8	0	-1.902923	0.068181	2.496603
81	1	0	4.200137	-0.946681	-0.937295
82	15	0	0.380299	-2.173751	1.436264
83	9	0	3.209451	-1.795797	-1.923513
84	9	0	3.695981	-0.426293	-1.656101
85	9	0	2.321054	-0.746145	0.274644
86	9	0	4.623054	-2.319077	-0.387065
87	9	0	5.117542	-0.078217	0.076751
88	9	0	5.399475	-1.094856	-1.971615
89	6	0	-1.977936	2.681003	0.623408



Zero-point correction= 0.728525
Thermal correction to Energy= 0.774462
Thermal correction to Enthalpy= 0.775406
Thermal correction to Gibbs Free Energy= 0.646341
Sum of electronic and zero-point Energies= -2865.510002
Sum of electronic and thermal Energies= -2865.473065
Sum of electronic and thermal Enthalpies= -2865.472121
Sum of electronic and thermal Free Energies= -2865.601186

