

H	-4.1266	-3.0465	.9262	H	3.2479	-3.4555	-4.2987	H	-1.0752	6.3372	-3.9150
H	-4.8078	-2.1531	2.3319	H	4.5726	-1.6916	-5.0928	H	-2.2247	4.6084	-5.0048
H	-5.8431	-2.5153	.9020	H	5.9449	-2.3318	-4.1697	H	-3.6900	5.0332	-4.1000
H	4.6066	-4.0520	-3.3273	H	-2.5298	6.7228	-2.9761				

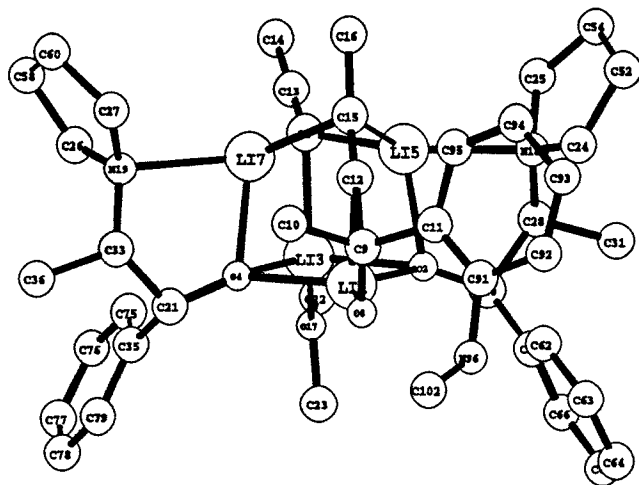


Figure XIV

$(\text{LiCCCH}_3)_2 \cdot [R,S\text{-LiOCH(Ph)CH(CH}_3\text{)N(CH}_2\text{)}_4\text{]}_2 \cdot (\text{Me}_2\text{O}) \cdot (\textit{ortho}\text{-MeNH-PhCOCH}_3)$   
 $\Delta H_f^\circ = -165.8 \text{ kcal/mol}$

Li	.0000	.0000	.0000	C	-2.5748	3.4193	-3.1297	H	4.2313	.1607	-3.6384
O	2.2225	.0000	.0000	C	4.4495	-.8909	-.6494	C	4.8919	-1.8794	-4.1659
Li	1.9003	2.2528	.0000	H	3.8826	.0723	1.1863	H	5.7452	-.3526	-2.8429
O	-.2924	2.2660	.0441	C	2.9674	-1.8566	1.3766	H	-.1121	5.1000	-2.2594
Li	2.1428	.3834	-2.0959	C	5.5971	-1.8271	-1.969	H	-1.4015	5.8509	-1.2739
C	2.1462	2.5160	-2.1634	H	4.9342	.1262	-.7456	C	-1.8589	5.7679	-3.4158
Li	.0350	2.2506	-2.0525	C	-2.3795	3.4353	-.6104	H	-2.0671	2.5667	-3.6524
O	-1.5848	-1.3223	.1339	H	-1.9504	2.3754	1.2248	C	-2.6799	4.6451	-4.0661
C	-1.8512	-1.5233	-1.1009	C	-.8091	4.1941	1.4213	H	-3.5970	3.0531	-2.8708
C	-3.1717	-.8850	-1.6437	C	-3.4790	4.4084	-.1182	C	1.9712	-2.8060	1.0492
C	-1.6925	-2.9776	-1.6325	H	-2.9267	2.4657	-.7938	C	1.7065	-3.9054	1.8916
C	-.5793	-.4729	-2.0564	H	3.5237	4.2348	-4.5545	C	2.4079	-4.0676	3.0956
C	2.8694	3.3199	-2.7524	H	4.7918	4.0420	-3.3020	C	3.3787	-3.1183	3.4566
C	3.7128	4.2628	-3.4585	H	3.5338	5.3061	-3.1168	C	3.6490	-2.0312	2.6106
C	-.0217	.0349	-3.0382	H	-.1522	-.2062	-5.1432	H	1.3865	-2.7168	.1300
C	.4343	.3814	-4.3982	H	1.5115	.1361	-4.5804	H	.9489	-4.6355	1.6050
O	3.3087	3.1732	1.5466	H	.2829	1.4587	-4.6568	H	2.1994	-4.9171	3.7460
N	3.9011	-1.1908	-2.0112	H	4.5089	4.0998	.1744	H	3.9230	-3.2241	4.3957
N	-1.7659	3.7985	-1.9301	H	5.4011	3.3048	1.5405	H	4.4059	-1.3127	2.9324
C	3.3176	-.6346	.4881	H	4.5216	4.8612	1.8201	H	5.2720	-2.8576	.0442
C	-1.3094	3.0184	.5356	H	2.0625	2.2340	2.8782	H	6.3913	-1.9110	-.9684
C	4.4853	3.8876	1.2701	H	2.9004	3.7096	3.5317	H	6.0887	-1.4136	.7082
C	3.0204	2.8104	2.8765	H	3.8266	2.1728	3.3183	C	.2884	5.0211	1.0782
C	3.4006	-2.5619	-2.3111	H	2.2886	-2.5174	-2.4307	C	.6773	6.0961	1.9035
C	4.7381	-.7180	-3.1571	H	3.5985	-3.2905	-1.4923	C	.0035	6.3529	3.1070
C	-1.2233	5.1712	-2.1378	C	4.0626	-3.0517	-3.6208	C	-1.0623	5.5198	3.4863

C	-1.4570	4.4568	2.6573	C	-1.9214	-4.1421	-.8289	H	-3.7320	-4.3545	2.0441
H	.8569	4.8612	.1554	C	-1.7913	-5.4406	-1.3991	H	-4.2512	-3.3251	.6637
H	1.5090	6.7344	1.6014	C	-1.4748	-5.6149	-2.7513	H	-4.1574	-5.1088	.4636
H	.3049	7.1861	3.7418	C	-1.2887	-4.4850	-3.5603	H	4.7029	-3.9400	-3.4324
H	-1.5857	5.6979	4.4264	C	-1.4038	-3.2032	-3.0026	H	3.2954	-3.3790	-4.3543
H	-2.2847	3.8281	2.9928	N	-2.2479	-4.1727	.5670	H	4.5465	-1.5758	-5.1771
H	-3.0999	5.3989	.2003	H	-1.9357	-6.3297	-.7812	H	5.9599	-2.1633	-4.2815
H	-4.2464	4.5918	-.8995	H	-1.3777	-6.6170	-3.1696	H	-2.5006	6.6409	-3.1689
H	-4.0158	3.9663	.7468	H	-1.0589	-4.5989	-4.6200	H	-1.0770	6.1496	-4.1062
H	-3.3468	.1298	-1.2370	H	-1.2757	-2.3651	-3.6891	H	-2.2999	4.4030	-5.0814
H	-4.0358	-1.5135	-1.3411	H	-1.7800	-3.4519	1.0907	H	-3.7399	4.9495	-4.2017
H	-3.1906	-.8147	-2.7490	C	-3.6628	-4.2320	.9388				

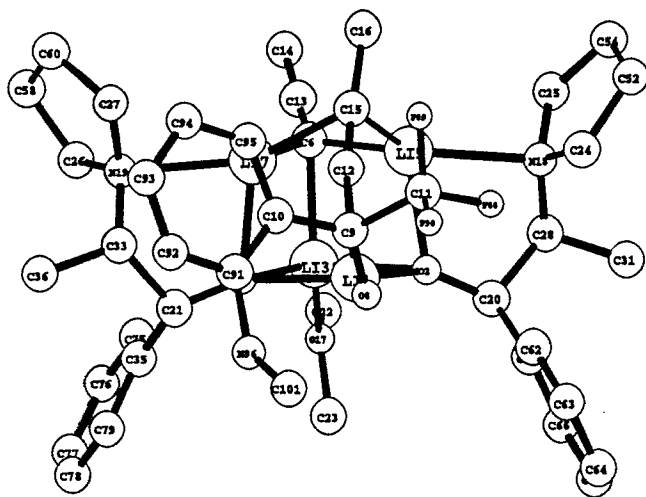


Figure XIVJ

(LiCCCH<sub>3</sub>)<sub>2</sub>·[R,S-LiOCH(Ph)CH(CH<sub>3</sub>)N(CH<sub>2</sub>)<sub>4</sub>]<sub>2</sub>·(Me<sub>2</sub>O)·(*ortho*-MeNH-PhCOCF<sub>3</sub>)

$\Delta H_f^\circ = -305.7$  kcal/mol

Li	.0000	.0000	.0000	C	3.1942	-2.6546	-2.2483	H	2.3198	2.2478	2.8879
O	2.2041	.0000	.0000	C	4.6845	-.9334	-3.0974	H	3.2348	3.7104	3.4604
Li	1.9500	2.2428	.0000	C	-1.0329	5.3502	-1.8578	H	4.1128	2.1560	3.1821
O	-.2481	2.2638	.1477	C	-2.3510	3.6971	-3.0430	H	2.0947	-2.5156	-2.4049
Li	2.1328	.3572	-2.1060	C	4.3656	-1.0640	-.5921	H	3.3009	-3.3804	-1.4105
C	2.1260	2.4821	-2.1811	H	3.8567	.0045	1.2018	C	3.8515	-3.2226	-3.5284
Li	.0286	2.2601	-1.9629	C	2.7948	-1.8384	1.4599	H	4.2479	-.0277	-3.5975
O	-1.6706	-1.3902	.1327	C	5.4159	-2.0982	-.1179	C	4.7650	-2.1201	-4.0854
C	-2.1344	-1.3439	-1.0285	H	4.9444	-.0979	-.6932	H	5.7116	-.6362	-2.7764
C	-3.4728	-.6681	-1.3493	C	-2.2781	3.5254	-.5173	H	.0811	5.2690	-1.9277
C	-2.0243	-2.8352	-1.8034	H	-1.9441	2.3597	1.2727	H	-1.2477	5.9687	-.9571
C	-.7336	-.2902	-2.0051	C	-.7631	4.1293	1.6098	C	-1.5926	6.0483	-3.1196
C	2.8429	3.2372	-2.8385	C	-3.3900	4.4729	-.0039	H	-1.8248	2.8772	-3.6024
C	3.6756	4.1309	-3.6180	H	-2.8232	2.5760	-.7939	C	-2.3916	4.9891	-3.8919
C	-.1050	.0380	-3.0193	H	3.4310	4.0719	-4.7016	H	-3.3904	3.3324	-2.8639
C	.4305	.1885	-4.3839	H	4.7546	3.8842	-3.5068	C	1.6825	-2.6683	1.1823
O	3.4688	3.1552	1.4520	H	3.5423	5.1896	-3.3039	C	1.2870	-3.6829	2.0782
N	3.8024	-1.3251	-1.9550	H	.2098	1.1917	-4.8196	C	1.9843	-3.8850	3.2788
N	-1.6026	3.9759	-1.7783	H	-.0501	-.5639	-5.0517	C	3.0808	-3.0605	3.5826
C	3.2509	-.6882	.5246	H	1.5362	.0225	-4.4601	C	3.4736	-2.0515	2.6887
C	-1.2608	3.0203	.6426	H	4.5609	4.0691	-.0163	H	1.1134	-2.5561	.2551
C	4.6247	3.8598	1.0783	H	5.5547	3.2702	1.2757	H	.4310	-4.3136	1.8341
C	3.2846	2.8060	2.8035	H	4.7129	4.8347	1.6202	H	1.6776	-4.6699	3.9702

H	3.6270	-3.2011	4.5159	H	-3.0165	5.4342	.3995	H	-2.9912	-.2938	-3.4527
H	4.3226	-1.4246	2.9694	H	-4.1214	4.7193	-.8022	C	-4.9802	-2.0221	1.5607
H	4.9912	-3.0868	.1426	H	-3.9665	3.9772	.8046	H	-3.5198	-.5950	1.3965
H	6.1990	-2.2740	-.8853	F	-.8695	-3.4958	-1.5473	H	-4.3817	-2.9264	1.3033
H	5.9444	-1.7160	.7802	F	-2.1381	-2.8169	-3.1547	H	-5.0056	-1.9368	2.6715
C	.3647	4.9454	1.3507	F	-3.0185	-3.6532	-1.3662	H	-6.0203	-2.1899	1.2036
C	.7531	5.9594	2.2499	C	-4.5243	-.5219	-.3831	H	4.4308	-4.1432	-3.3010
C	.0476	6.1626	3.4454	C	-5.7916	-.0099	-.7895	H	3.0812	-3.5224	-4.2700
C	-1.0507	5.3377	3.7410	C	-6.0355	.3694	-2.1132	H	4.4495	-1.8105	-5.1046
C	-1.4448	4.3365	2.8381	C	-5.0043	.2635	-3.0597	H	5.8116	-2.4792	-4.1866
H	.9582	4.8236	.4381	C	-3.7535	-.2366	-2.6735	H	-2.2357	6.9113	-2.8430
H	1.6095	6.5921	2.0122	N	-4.4346	-.7745	1.0193	H	-.7706	6.4663	-3.7385
H	.3492	6.9483	4.1381	H	-6.5970	.1052	-.0607	H	-1.9612	4.8148	-4.9011
H	-1.5998	5.4742	4.6733	H	-7.0147	.7508	-2.4046	H	-3.4392	5.3191	-4.0596
H	-2.2990	3.7123	3.1093	H	-5.1747	.5641	-4.0937				

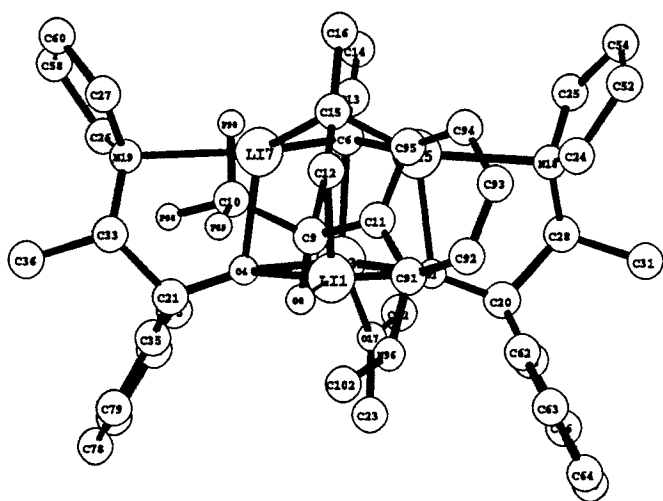
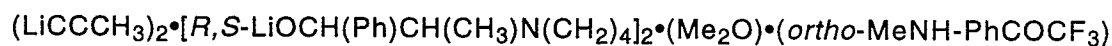


Figure XIVK



$\Delta H_f^\circ = -303.8 \text{ kcal/mol}$

Li	.0000	.0000	.0000	N	-1.8339	3.7728	-1.8432	H	-2.9453	2.4016	-.7018
O	2.2270	.0000	.0000	C	3.3732	-.5570	.4637	H	3.3599	4.2637	-4.6086
Li	1.8823	2.2695	.0000	C	-1.3192	2.9734	.6042	H	4.6604	4.1040	-3.3848
O	-.3031	2.2315	.0888	C	4.4666	3.9639	1.1911	H	3.3806	5.3426	-3.1766
Li	2.1018	.3963	-2.0946	C	3.0720	2.8760	2.8514	H	-.3308	-.1884	-5.0883
C	2.0849	2.5257	-2.1707	C	3.4806	-2.5058	-2.3230	H	1.3593	.1435	-4.6003
Li	-.0189	2.2683	-2.0220	C	4.7009	-.6064	-3.2187	H	.1289	1.4665	-4.5858
O	-1.6775	-1.3745	.1894	C	-1.3336	5.1620	-2.0468	H	4.4578	4.1575	.0918
C	-1.7974	-1.7786	-.9889	C	-2.6571	3.3845	-3.0318	H	5.4043	3.4107	1.4484
C	-3.2888	-1.3912	-1.6590	C	4.4864	-.7710	-.7018	H	4.4894	4.9473	1.7238
C	-1.3866	-3.1983	-1.4051	H	3.9166	.1971	1.1293	H	2.1286	2.2773	2.8875
C	-.5824	-.5323	-1.9860	C	3.1305	-1.7773	1.3900	H	2.9475	3.7828	3.4950
C	2.7674	3.3446	-2.7870	C	5.6891	-1.6469	-.2718	H	3.9041	2.2647	3.2822
C	3.5738	4.3016	-3.5176	H	4.9197	.2671	-.8189	H	2.3660	-2.5149	-2.4221
C	-.0910	-.0001	-2.9892	C	-2.4163	3.3800	-.5169	H	3.7277	-3.2149	-1.5007
C	.2922	.3832	-4.3613	H	-1.9350	2.3204	1.3065	C	4.1408	-2.9781	-3.6400
O	3.3173	3.2220	1.5086	C	-.8107	4.1516	1.4817	H	4.1317	.2326	-3.7014
N	3.9188	-1.1092	-2.0465	C	-3.5253	4.3249	.0082	C	4.8994	-1.7725	-4.2144

H	5.6913	-1.778	-2.9331	C	.6579	6.0754	1.9306	H	-1.2189	-6.4908	-3.314
H	-2.240	5.1220	-2.1956	C	.0100	6.3204	3.1506	H	-5.072	-6.8473	-2.6641
H	-1.5083	5.8268	-1.1708	C	-1.0332	5.4704	3.5547	H	-3.333	-4.8958	-4.2252
C	-2.0141	5.7564	-3.3025	C	-1.4321	4.4027	2.7338	H	-8.812	-2.6539	-3.4637
H	-2.1353	2.5534	-3.5752	H	.8136	4.8460	.1761	H	-1.5862	-3.4311	1.3202
C	-2.8153	4.6182	-3.9505	H	1.4713	6.7274	1.6088	C	-3.1558	-4.7414	1.2978
H	-3.6627	2.9868	-2.7569	H	.3136	7.1578	3.7788	H	-3.1024	-4.9668	2.3883
C	2.2071	-2.8097	1.1068	H	-1.5363	5.6395	4.5074	H	-3.9560	-3.9798	1.1488
C	2.0431	-3.9037	1.9806	H	-2.2425	3.7618	3.0877	H	-3.4661	-5.6689	.7690
C	2.7746	-3.9788	3.1751	H	-3.1602	5.3187	.3328	H	4.8282	-3.8310	-3.4544
C	3.6741	-2.9474	3.4935	H	-4.3103	4.5027	-.7565	H	3.3770	-3.3519	-4.3544
C	3.8447	-1.8660	2.6149	H	-4.0369	3.8611	.8771	H	4.5228	-1.5015	-5.2237
H	1.6017	-2.7875	.1980	F	-3.7781	-.1993	-1.2420	H	5.9788	-2.0023	-4.3435
H	1.3411	-4.6985	1.7267	F	-4.2213	-2.3115	-1.2938	H	-2.6756	6.6066	-3.0297
H	2.6441	-4.8243	3.8505	F	-3.3322	-1.3533	-3.0144	H	-1.2589	6.1706	-4.0038
H	4.2407	-2.9854	4.4245	C	-1.4888	-4.3259	-.5215	H	-2.4485	4.3995	-4.9760
H	4.5499	-1.0836	2.9034	C	-1.1617	-5.6291	-.9999	H	-3.8859	4.8936	-4.0619
H	5.4204	-2.6897	-.0141	C	-.7501	-5.8417	-2.3193				
H	6.4662	-1.6997	-1.0632	C	-.6492	-4.7477	-3.1924				
H	6.1833	-1.2021	.6169	C	-.9629	-3.4611	-2.7342				
C	.2659	4.9951	1.1134	N	-1.8315	-4.2910	.8622				

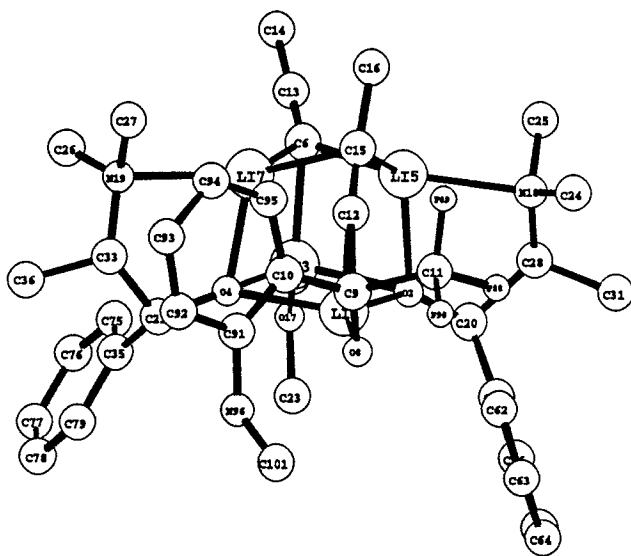


Figure XIVL

$(\text{LiCCCH}_3)_2 \cdot [R, S\text{-LiOCH(Ph)CH(CH}_3\text{)N(CH}_2\text{)}_4]_2 \cdot (\text{Me}_2\text{O}) \cdot (\text{ortho-MeNH-PhCOCF}_3)$   
 $\Delta H_f^\circ = -289.3 \text{ kcal/mol}$

Li	.0000	.0000	.0000	C	-.7187	-.2953	-2.0127	C	3.3841	2.7610	2.7955
O	2.2098	.0000	.0000	C	2.8672	3.2639	-2.8312	C	3.0108	-2.6134	-2.3282
Li	1.9754	2.2420	.0000	C	3.6911	4.1737	-3.6016	C	4.6032	-.8522	-2.9985
O	-.2392	2.2645	.1233	C	-.1086	.0777	-3.0229	C	-1.0194	5.4284	-1.8749
Li	2.1250	.3633	-2.1050	C	.3964	.2846	-4.3921	C	-2.1599	3.5997	-3.0314
C	2.1627	2.4909	-2.1814	O	3.5416	3.1154	1.4420	C	4.2731	-1.2848	-.5518
Li	.0699	2.2942	-1.9828	N	3.6995	-1.3617	-1.9359	H	3.9069	-.0068	1.1373
O	-1.7129	-1.3424	.1283	N	-1.5068	4.0355	-1.7693	C	2.7236	-1.7315	1.6044
C	-2.1369	-1.3373	-1.0488	C	3.2275	-.7116	.5488	C	5.0577	-2.5473	-.1223
C	-3.4679	-.6801	-1.4331	C	-1.2325	3.0367	.6338	H	5.0579	-.4738	-.5874
C	-1.9851	-2.8509	-1.7698	C	4.7071	3.7903	1.0438	C	-2.2209	3.6178	-.5163

H	-1.9439	2.3800	1.2356	H	-1.8068	6.1419	-2.2227	H	.4839	6.7995	4.2568
C	-.7046	4.0963	1.6396	H	-2.3927	2.5068	-3.0120	H	-1.5195	5.3797	4.7348
C	-3.2638	4.6408	-.0062	H	-1.4810	3.7915	-3.9011	H	-2.2676	3.6903	3.1135
H	-2.8368	2.7132	-.7918	H	-3.1176	4.1366	-3.2403	H	-2.8247	5.5830	.3759
H	3.4391	4.1313	-4.6842	C	1.5398	-2.4909	1.4417	H	-3.9860	4.9159	-.8039
H	4.7716	3.9290	-3.5018	C	1.1011	-3.3801	2.4446	H	-3.8614	4.1959	.8162
H	3.5559	5.2265	-3.2692	C	1.8270	-3.5243	3.6368	F	-.8426	-3.4964	-1.4320
H	.1311	1.2911	-4.7956	C	2.9977	-2.7700	3.8236	F	-2.0279	-2.8777	-3.1249
H	-.0690	-.4660	-5.0727	C	3.4338	-1.8857	2.8239	F	-2.9981	-3.6586	-1.3576
H	1.5055	.1628	-4.4933	H	.9504	-2.4282	.5216	C	-4.5376	-.4773	-.4977
H	4.6195	4.0146	-.0461	H	.1901	-3.9600	2.2896	C	-5.7909	.0269	-.9541
H	5.6245	3.1716	1.2086	H	1.4863	-4.2122	4.4108	C	-6.0055	.3408	-2.2998
H	4.8390	4.7558	1.5936	H	3.5686	-2.8686	4.7475	C	-4.9588	.1722	-3.2198
H	2.4090	2.2250	2.9009	H	4.3432	-1.3110	3.0122	C	-3.7218	-.3208	-2.7840
H	3.3721	3.6618	3.4591	H	4.4186	-3.4292	.0771	N	-4.4827	-.6662	.9170
H	4.2061	2.0897	3.1490	H	5.8017	-2.8472	-.8907	H	-6.6084	.1870	-.2478
H	2.3627	-2.4247	-3.2187	H	5.6369	-2.3383	.8009	H	-6.9740	.7189	-2.6290
H	2.3629	-2.9946	-1.5099	C	.4544	4.8781	1.4124	H	-5.1066	.4190	-4.2715
H	3.7180	-3.4325	-2.6083	C	.8694	5.8520	2.3438	H	-2.9476	-.4301	-3.5458
H	4.9476	.1847	-2.7644	C	.1611	6.0450	3.5394	C	-5.0381	-1.8927	1.4958
H	4.0692	-.8201	-3.9806	C	-.9678	5.2510	3.8029	H	-3.5775	-.4681	1.3077
H	5.5141	-1.4827	-3.1440	C	-1.3894	4.2913	2.8680	H	-4.4444	-2.8088	1.2707
H	-.1806	5.4747	-2.6103	H	1.0492	4.7638	.4985	H	-5.0694	-1.7716	2.6030
H	-.6378	5.8135	-.9070	H	1.7481	6.4625	2.1308	H	-6.0773	-2.0648	1.1378

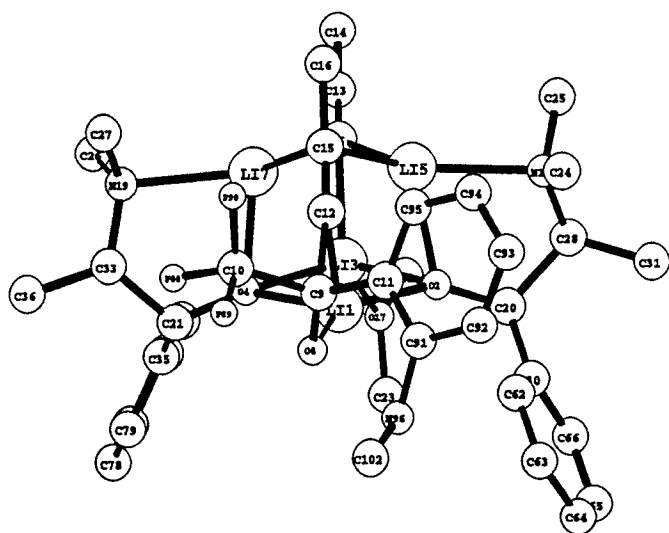


Figure XIVM

$(\text{LiCCCH}_3)_2 \cdot [R,S\text{-LiOCH(Ph)CH(CH}_3\text{)N(CH}_2\text{)}_4\text{]}_2 \cdot (\text{Me}_2\text{O}) \cdot (\text{ortho-MeNH-PhCOCF}_3)$   
 $\Delta H_f^\circ = -287.6 \text{ kcal/mol}$

Li	.0000	.0000	.0000	Li	1.9229	2.2608	.0000	Li	2.0787	.3953	-2.0946
O	2.2232	.0000	.0000	O	-.2806	2.2417	.0783	C	2.1256	2.5239	-2.1744

Li	.0245	2.3200	-2.0290	H	3.4285	5.3390	-3.1787	H	6.0291	-2.4989	-1.0655
O	-1.6888	-1.3572	.1768	H	-.4220	-.0595	-5.0861	H	5.8696	-2.0360	.6395
C	-1.8288	-1.7486	-1.0036	H	1.2770	.2683	-4.6269	C	.3731	4.8993	1.3027
C	-3.3176	-1.3274	-1.6553	H	.0404	1.5823	-4.5446	C	.7852	5.9049	2.2013
C	-1.4488	-3.1720	-1.4365	H	4.5397	4.0836	.0228	C	.1153	6.0930	3.4196
C	-.6074	-.5027	-1.9951	H	5.5257	3.2748	1.3143	C	-.9715	5.2617	3.7394
C	2.8059	3.3432	-2.7927	H	4.6834	4.8373	1.6654	C	-1.3916	4.2708	2.8369
C	3.6073	4.2990	-3.5303	H	2.2880	2.2344	2.9012	H	.9384	4.7911	.3694
C	-.1350	.0644	-2.9883	H	3.1872	3.7011	3.4886	H	1.6314	6.5440	1.9447
C	.2147	.4933	-4.3561	H	4.0793	2.1559	3.2073	H	.4352	6.8724	4.1111
O	3.4386	3.1602	1.4785	H	2.4906	-2.3556	-3.2866	H	-1.4920	5.3861	4.6896
N	3.7658	-1.2037	-2.0203	H	2.5405	-2.9161	-1.5753	H	-2.2368	3.6421	3.1254
N	-1.6855	3.8933	-1.8130	H	3.9109	-3.2732	-2.6831	H	-2.8786	5.5318	.3404
C	3.3192	-.6271	.4940	H	4.9173	.4109	-2.8634	H	-4.1028	4.8224	-.7469
C	-1.2808	2.9903	.6139	H	4.0112	-.5900	-4.0621	H	-3.8922	4.1666	.8905
C	4.5971	3.8665	1.1161	H	5.5205	-1.2232	-3.3190	F	-3.7386	-.0885	-1.3066
C	3.2485	2.8012	2.8267	H	-.4255	5.2998	-2.8021	F	-4.2805	-2.1756	-1.2038
C	3.1565	-2.4982	-2.4005	H	-.7518	5.6973	-1.0804	F	-3.3960	-1.3774	-3.0086
C	4.5970	-.6300	-3.1100	H	-2.0163	5.9862	-2.3152	C	-1.6493	-4.3213	-.5951
C	-1.2066	5.2812	-2.0032	H	-2.6334	2.3179	-2.9446	C	-1.2782	-5.6142	-1.0736
C	-2.4314	3.4141	-3.0077	H	-1.8327	3.6008	-3.9346	C	-.7623	-5.7994	-2.3590
C	4.3736	-1.0907	-.6532	H	-3.4142	3.9267	-3.1473	C	-.6000	-4.6895	-3.2026
H	3.9583	.1261	1.0684	C	1.8835	-2.6109	1.4103	C	-.9387	-3.4118	-2.7389
C	2.9647	-1.7093	1.5483	C	1.6016	-3.5687	2.4059	N	-2.1431	-4.2948	.7363
C	5.2843	-2.2819	-.2705	C	2.3789	-3.6363	3.5720	H	-1.3829	-6.4925	-.4337
H	5.0795	-.2109	-.7027	C	3.4441	-2.7356	3.7395	H	-.4894	-6.7980	-2.7025
C	-2.3264	3.5293	-.5033	C	3.7274	-1.7875	2.7438	H	-.2160	-4.8188	-4.2144
H	-1.9476	2.3204	1.2501	H	1.2478	-2.5967	.5208	H	-.8070	-2.5907	-3.4452
C	-.7476	4.0804	1.5857	H	.7721	-4.2631	2.2693	H	-2.1375	-3.3901	1.1685
C	-3.3387	4.5764	.0205	H	2.1576	-4.3767	4.3407	C	-3.3730	-5.0148	1.0802
H	-2.9569	2.6173	-.7066	H	4.0517	-2.7709	4.6445	H	-3.7552	-4.6390	2.0562
H	3.3742	4.2703	-4.6176	H	4.5602	-1.1021	2.9155	H	-4.1859	-4.9015	.3264
H	4.6945	4.0918	-3.4179	H	4.7356	-3.2227	-.0706	H	-3.1630	-6.1025	1.1956

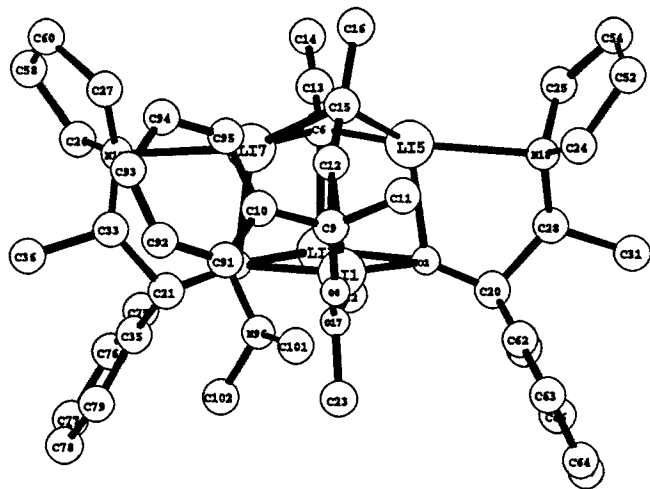


Figure XIVN

$(\text{LiCCCH}_3)_2 \cdot [R,S\text{-LiOCH(Ph)CH(CH}_3\text{)N(CH}_2\text{)}_4\text{]}_2 \cdot (\text{Me}_2\text{O}) \cdot (\text{ortho-Me}_2\text{N-PhCOCH}_3)$   
 $\Delta H_f^\circ = -158.7 \text{ kcal/mol}$

Li	.0000	.0000	.0000	C	-3.4947	4.3238	-.1864	H	4.2520	-1.4586	3.0056
O	2.2144	.0000	.0000	H	-2.8160	2.4454	-.9343	H	5.0952	-3.0094	.1858
Li	1.9281	2.2489	.0000	H	3.5197	4.2068	-4.5946	H	6.3036	-2.1367	-.7907
O	-.2590	2.2676	.0612	H	4.8066	4.0232	-3.3600	H	5.9734	-1.6129	.8728
Li	2.1853	.3814	-2.0960	H	3.5504	5.2876	-3.1643	C	.2484	4.9789	1.2221
C	2.1791	2.5078	-2.1658	H	.4012	1.2738	-4.7806	C	.5887	6.0257	2.1029
Li	.0685	2.2503	-2.0381	H	.0970	-.4598	-5.0992	C	-.1558	6.2465	3.2713
O	-1.5951	-1.2912	.0674	H	1.6789	.0453	-4.4321	C	-1.2440	5.4056	3.5586
C	-1.9076	-1.4405	-1.1630	H	4.5335	4.0956	.1326	C	-1.5890	4.3704	2.6743
C	-3.3478	-1.0171	-1.5895	H	5.4475	3.3197	1.4953	H	.8712	4.8455	.3309
C	-1.5435	-2.8120	-1.8291	H	4.5589	4.8717	1.7712	H	1.4383	6.6700	1.8720
C	-.7055	-.3538	-2.0978	H	2.1273	2.2449	2.8823	H	.1084	7.0578	3.9496
C	2.8932	3.3035	-2.7765	H	2.9809	3.7202	3.5154	H	-1.8231	5.5557	4.4705
C	3.7251	4.2421	-3.5018	H	3.8981	2.1790	3.2951	H	-2.4356	3.7336	2.9401
C	-.0120	.0440	-3.0427	H	2.2560	-2.5132	-2.4342	H	-3.1790	5.3113	.2030
C	.5766	.2461	-4.3804	H	3.4688	-3.3471	-1.4226	H	-4.2242	4.5160	-1.0012
O	3.3565	3.1717	1.5268	C	4.0642	-3.1368	-3.5235	H	-4.0591	3.8148	.6223
N	3.9054	-1.2668	-1.9251	H	4.3555	.0705	-3.5340	H	-.4828	-3.0936	-1.6794
N	-1.6473	3.8930	-1.9154	C	4.9544	-1.9957	-4.0383	H	-1.7360	-2.8125	-2.9207
C	3.2545	-.6811	.5440	H	5.8139	-.5040	-2.6796	H	-2.1618	-3.6186	-1.3840
C	-1.3087	2.9919	.5263	H	-.0160	5.2512	-2.0630	C	-4.5013	-1.2720	-.7769
C	4.5240	3.8930	1.2303	H	-1.3753	5.9008	-1.0996	C	-5.7914	-.8662	-1.2135
C	3.0873	2.8175	2.8628	C	-1.7145	5.9602	-3.2636	C	-5.9786	-.2591	-2.4623
C	3.3560	-2.6123	-2.2519	H	-1.7838	2.7929	-3.7456	C	-4.8703	-.0595	-3.2956
C	4.8065	-.8284	-3.0350	C	-2.4688	4.8678	-4.0347	C	-3.5897	-.4364	-2.8590
C	-1.1327	5.2886	-1.9974	H	-3.3818	3.1502	-3.0241	N	-4.3840	-1.9745	.4714
C	-2.3642	3.5770	-3.1894	C	1.7165	-2.7218	1.0869	H	-6.6693	-1.0278	-.5845
C	4.4164	-1.0013	-.5424	C	1.3165	-3.7717	1.9390	H	-6.9755	.0442	-2.7829
H	3.8212	.0038	1.2621	C	1.9752	-3.9902	3.1582	H	-4.9990	.3844	-4.2832
C	2.7938	-1.8699	1.4279	C	3.0365	-3.1455	3.5250	H	-2.7720	-.2732	-3.5628
C	5.4897	-2.0015	-.0475	C	3.4326	-2.1005	2.6751	C	-4.9233	-3.3337	.5184
H	4.9614	-.0133	-.6151	H	1.1740	-2.5964	.1460	C	-4.4850	-1.1824	1.6994
C	-2.3261	3.4259	-.6618	H	.4845	-4.4144	1.6479	H	-4.7531	-3.8638	-.4453
H	-1.9729	2.3204	1.1643	H	1.6647	-4.8018	3.8163	H	-4.4100	-3.9129	1.3202
C	-.8678	4.1440	1.4722	H	3.5519	-3.2979	4.4740	H	-6.0211	-3.3718	.7293

H	-4.0275	-1.780	1.5682	H	3.3233	-3.4487	-4.2899	H	-0.9070	6.4075	-3.8812
H	-5.5430	-1.0266	2.0312	H	4.6563	-1.6808	-5.0611	H	-2.0367	4.7158	-5.0467
H	-3.9498	-1.7020	2.5267	H	6.0148	-2.3180	-4.1158	H	-3.5312	5.1504	-4.1959
H	4.6672	-4.0420	-3.2962	H	-2.3915	6.7987	-2.9926				

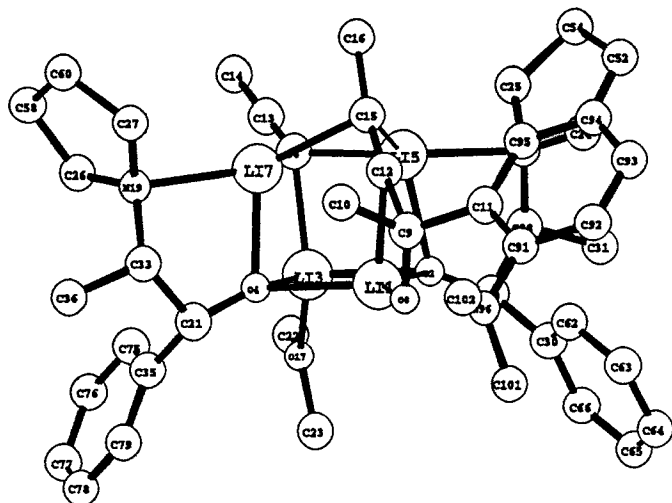


Figure XIVO

$(\text{LiC}(\text{CCH}_3)_2)_2 \cdot [R,S\text{-LiOCH}(\text{Ph})\text{CH}(\text{CH}_3)\text{N}(\text{CH}_2)_4]_2 \cdot (\text{Me}_2\text{O}) \cdot (\text{ortho-Me}_2\text{N-PhCOCH}_3)$   
 $\Delta H_f^\circ = -157.9 \text{ kcal/mol}$

Li	.0000	.0000	.0000	H	3.8566	.0114	1.2248	H	-1.3989	5.8835	-1.1201
O	2.2214	.0000	.0000	C	2.8397	-1.8651	1.4179	C	-1.8169	5.8891	-3.2718
Li	1.9281	2.2480	.0000	C	5.5008	-1.9920	-1.1179	H	-1.8818	2.7126	-3.6760
O	-.2580	2.2675	.0928	H	4.9541	-.0067	-.6776	C	-2.5920	4.7756	-3.9907
Li	2.1507	.3778	-2.0992	C	-2.3403	3.4222	-.5931	H	-3.4591	3.0738	-2.9136
C	2.1519	2.5057	-2.1692	H	-1.9403	2.3469	1.2413	C	1.7606	-2.7242	1.1017
Li	.0430	2.2489	-2.0127	C	-.8202	4.1716	1.4850	C	1.3841	-3.7738	1.9645
O	-1.5771	-1.3258	.0554	C	-3.4879	4.3388	-.1024	C	2.0686	-3.9850	3.1707
C	-1.8425	-1.4129	-1.1950	H	-2.8450	2.4403	-.8293	C	3.1323	-3.1332	3.5133
C	-3.2234	-.8776	-1.6516	H	3.4670	4.1947	-4.6180	C	3.5050	-2.0885	2.6524
C	-1.5165	-2.7960	-1.8525	H	4.7683	4.0114	-3.3984	H	1.1980	-2.6034	.1723
C	-.6025	-.3112	-2.1015	H	3.5183	5.2801	-3.1917	H	.5504	-4.4224	1.6920
C	2.8601	3.2993	-2.7895	H	.2812	1.2914	-4.8745	H	1.7764	-4.7965	3.8371
C	3.6858	4.2331	-3.5279	H	.0337	-.4568	-5.1681	H	3.6678	-3.2798	4.4520
C	.0035	.0668	-3.1132	H	1.6204	.1224	-4.5726	H	4.3274	-1.4411	2.9642
C	.5153	.2752	-4.4782	H	4.5417	4.0845	.1059	H	5.1148	-3.0008	.1257
O	3.3715	3.1702	1.5120	H	5.4628	3.3088	1.4638	H	6.2986	-2.1259	-.8786
N	3.8728	-1.2662	-1.9611	H	4.5834	4.8655	1.7419	H	6.0034	-1.6003	.7909
N	-1.6967	3.8559	-1.8767	H	2.1500	2.2505	2.8792	C	.2880	5.0008	1.1849
C	3.2755	-.6763	.5211	H	3.0109	3.7263	3.5013	C	.6561	6.0629	2.0359
C	-1.2918	3.0045	.5729	H	3.9234	2.1824	3.2799	C	-.0513	6.3051	3.2230
C	4.5399	3.8854	1.2042	H	2.2183	-2.5194	-2.4354	C	-1.1303	5.4705	3.5593
C	3.1110	2.8211	2.8510	H	3.4530	-3.3465	-1.4449	C	-1.5033	4.4200	2.7048
C	3.3219	-2.6144	-2.2738	C	4.0070	-3.1399	-3.5576	H	.8822	4.8515	.2767
C	4.7460	-.8256	-3.0924	H	4.2768	.0672	-3.5856	H	1.4981	6.7024	1.7670
C	-1.1882	5.2498	-2.0111	C	4.8813	-1.9962	-4.0937	H	.2341	7.1282	3.8780
C	-2.4511	3.5050	-3.1205	H	5.7581	-.4917	-2.7603	H	-1.6805	5.6375	4.4860
C	4.4138	-.9960	-.5907	H	-.0742	5.2124	-2.1159	H	-2.3417	3.7891	3.0080



H	-3.1538	5.3312	.2581	C	-3.5811	-.7301	-3.0133	H	-7.6266	-.9900	-4.4068
H	-4.2394	4.5202	-.8993	H	-4.0343	-.6921	.3756	H	4.6187	-4.0415	-3.3394
H	-4.0319	3.8505	.7327	H	-6.2632	-.0156	-.2932	H	3.2525	-3.4577	-4.3080
H	-.5266	-3.1880	-1.5474	N	-7.1494	.4038	-2.8680	H	4.5625	-1.6872	-5.1119
H	-1.5304	-2.7670	-2.9593	H	-5.0771	-.2266	-4.4769	H	5.9418	-2.3133	-4.1897
H	-2.2809	-3.5349	-1.5303	H	-2.8574	-.9249	-3.8073	H	-2.4882	6.7309	-2.9971
C	-4.2329	-.6001	-.6949	C	-8.0655	-.5669	-3.4770	H	-1.0333	6.3251	-3.9271
C	-5.5278	-.2095	-1.0763	H	-7.6203	.8626	-2.1016	H	-2.1946	4.6022	-5.0134
C	-5.8672	-.0718	-2.4434	H	-9.0096	-.0420	-3.7489	H	-3.6607	5.0497	-4.1210
C	-4.8688	-.3327	-3.4112	H	-8.3315	-1.4180	-2.8053				

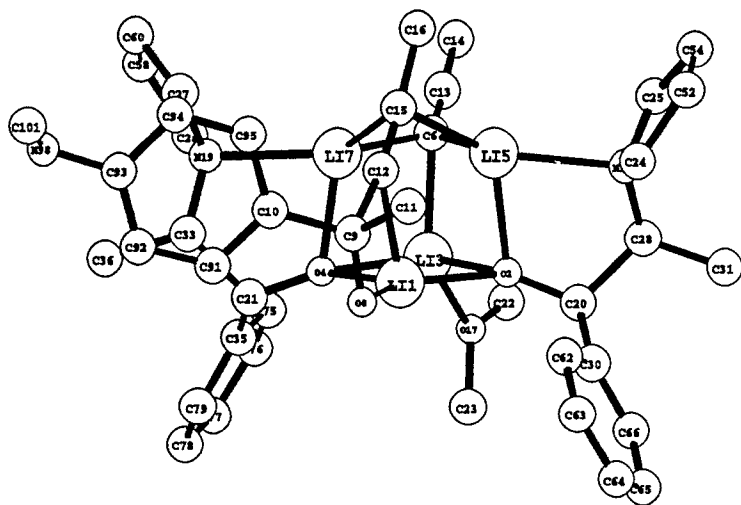


Figure XIVP

$(\text{LiCCCH}_3)_2 \cdot [R,S\text{-LiOCH(Ph)CH(CH}_3\text{)N(CH}_2\text{)}_4\text{]}_2 \cdot (\text{Me}_2\text{O}) \cdot (\textit{para}\text{-MeNH-PhCOCH}_3)$

$\Delta H_f^\circ = -173.3 \text{ kcal/mol}$

Li	.0000	.0000	.0000	C	-1.2918	3.0045	.5729	H	.2812	1.2914	-4.8745
O	2.2214	.0000	.0000	C	4.5399	3.8854	1.2042	H	.0337	-.4568	-5.1681
Li	1.9281	2.2480	.0000	C	3.1110	2.8211	2.8510	H	1.6204	.1224	-4.5726
O	-.2580	2.2675	.0928	C	3.3219	-2.6144	-2.2738	H	4.5417	4.0845	.1059
Li	2.1507	.3778	-2.0992	C	4.7460	-.8256	-3.0924	H	5.4628	3.3088	1.4638
C	2.1519	2.5057	-2.1692	C	-1.1882	5.2498	-2.0111	H	4.5834	4.8655	1.7419
Li	.0430	2.2489	-2.0127	C	-2.4511	3.5050	-3.1205	H	2.1500	2.2505	2.8792
O	-1.5771	-1.3258	.0554	C	4.4138	-.9960	-.5907	H	3.0109	3.7263	3.5013
C	-1.8425	-1.4129	-1.1950	H	3.8566	.0114	1.2248	H	3.9234	2.1824	3.2799
C	-3.2234	-.8776	-1.6516	C	2.8397	-1.8651	1.4179	H	2.2183	-2.5194	-2.4354
C	-1.5165	-2.7960	-1.8525	C	5.5008	-1.9920	-.1179	H	3.4530	-3.3465	-1.4449
C	-.6025	-.3112	-2.1015	H	4.9541	-.0067	-.6776	C	4.0070	-3.1399	-3.5576
C	2.8601	3.2993	-2.7895	C	-2.3403	3.4222	-.5931	H	4.2768	.0672	-3.5856
C	3.6858	4.2331	-3.5279	H	-1.9403	2.3469	1.2413	C	4.8813	-1.9962	-4.0937
C	.0035	.0668	-3.1132	C	-.8202	4.1716	1.4850	H	5.7581	-.4917	-2.7603
C	.5153	.2752	-4.4782	C	-3.4879	4.3388	-.1024	H	-.0742	5.2124	-2.1159
O	3.3715	3.1702	1.5120	H	-2.8450	2.4403	-.8293	H	-1.3989	5.8835	-1.1201
N	3.8728	-1.2662	-1.9611	H	3.4670	4.1947	-4.6180	C	-1.8169	5.8891	-3.2718
N	-1.6967	3.8559	-1.8767	H	4.7683	4.0114	-3.3984	H	-1.8818	2.7126	-3.6760
C	3.2755	-.6763	.5211	H	3.5183	5.2801	-3.1917	C	-2.5920	4.7756	-3.9907

H	-3.4591	3.0738	-2.9136	C	-1.5033	4.4200	2.7048	H	-6.2632	-.0156	-.2932
C	1.7606	-2.7242	1.1017	H	.8822	4.8515	.2767	N	-7.1494	.4038	-2.8680
C	1.3841	-3.7738	1.9645	H	1.4981	6.7024	1.7670	H	-5.0771	-.2266	-4.4769
C	2.0686	-3.9850	3.1707	H	.2341	7.1282	3.8780	H	-2.8574	-.9249	-3.8073
C	3.1323	-3.1332	3.5133	H	-1.6805	5.6375	4.4860	C	-8.0655	-.5669	-3.4770
C	3.5050	-2.0885	2.6524	H	-2.3417	3.7891	3.0080	H	-7.6203	.8626	-2.1016
H	1.1980	-2.6034	.1723	H	-3.1538	5.3312	.2581	H	-9.0096	-.0420	-3.7489
H	.5504	-4.4224	1.6920	H	-4.2394	4.5202	-.8993	H	-8.3315	-1.4180	-2.8053
H	1.7764	-4.7965	3.8371	H	-4.0319	3.8505	.7327	H	-7.6266	-.9900	-4.4068
H	3.6678	-3.2798	4.4520	H	-.5266	-3.1880	-1.5474	H	4.6187	-4.0415	-3.3394
H	4.3274	-1.4411	2.9642	H	-1.5304	-2.7670	-2.9593	H	3.2525	-3.4577	-4.3080
H	5.1148	-3.0008	.1257	H	-2.2809	-3.5349	-1.5303	H	4.5625	-1.6872	-5.1119
H	6.2986	-2.1259	-.8786	C	-4.2329	-.6001	-.6949	H	5.9418	-2.3133	-4.1897
H	6.0034	-1.6003	.7909	C	-5.5278	-.2095	-1.0763	H	-2.4882	6.7309	-2.9971
C	.2880	5.0008	1.1849	C	-5.8672	-.0718	-2.4434	H	-1.0333	6.3251	-3.9271
C	.6561	6.0629	2.0359	C	-4.8688	-.3327	-3.4112	H	-2.1946	4.6022	-5.0134
C	-.0513	6.3051	3.2230	C	-3.5811	-.7301	-3.0133	H	-3.6607	5.0497	-4.1210
C	-1.1303	5.4705	3.5593	H	-4.0343	-.6921	.3756				

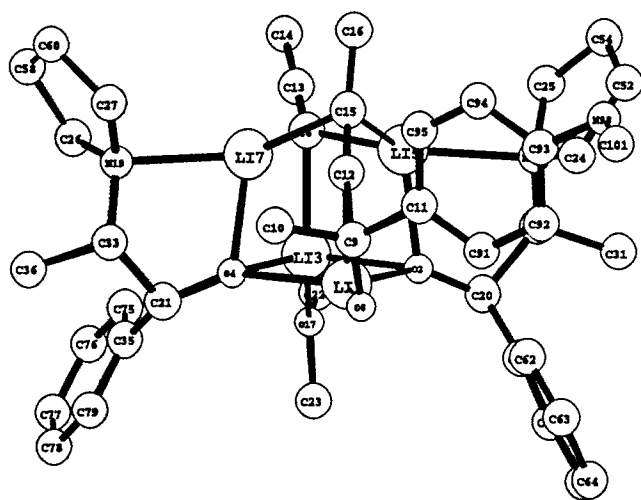


Figure XIVQ

$(\text{LiCCCH}_3)_2 \cdot [R, S\text{-LiOCH(Ph)CH(CH}_3\text{)N(CH}_2\text{)}_4\text{]}_2 \cdot (\text{Me}_2\text{O}) \cdot (\textit{para}\text{-MeNH-PhCOCH}_3)$   
 $\Delta H_f^\circ = -172.6 \text{ kcal/mol}$

Li	.0000	.0000	.0000	O	3.3956	3.1432	1.5219	C	-2.2999	3.5350	-.5795
O	2.2228	.0000	.0000	N	3.8039	-1.3180	-1.9858	H	-1.9151	2.4439	1.2470
Li	1.9393	2.2465	.0000	N	-1.6675	3.8931	-1.8914	C	-.7191	4.2243	1.4678
O	-.2537	2.2930	.0771	C	3.2925	-.6666	.5022	C	-3.3723	4.5354	-.0826
Li	2.1378	.3654	-2.1014	C	-1.2492	3.0727	.5681	H	-2.8761	2.5853	-.7768
C	2.1741	2.4967	-2.1674	C	4.5833	3.8269	1.2163	H	3.5868	4.1179	-4.6076
Li	.0600	2.2659	-2.0206	C	3.1298	2.7905	2.8589	H	4.8600	3.9082	-3.3629
O	-1.5194	-1.4007	.0380	C	3.1995	-2.6542	-2.2517	H	3.6446	5.2152	-3.1908
C	-1.8597	-1.3858	-1.1975	C	4.6596	-.9297	-3.1490	H	-.0529	-.3075	-5.1962
C	-3.2036	-.6482	-1.5064	C	-1.0905	5.2537	-2.0845	H	1.5739	.1514	-4.6066
C	-1.7475	-2.7261	-1.9705	C	-2.4730	3.5426	-3.1021	H	.2936	1.4054	-4.8133
C	-.5937	-.3185	-2.1038	C	4.3895	-1.0348	-.6367	H	4.5849	4.0402	.1206
C	2.9206	3.2590	-2.7823	H	3.9049	.0411	1.1583	H	5.4900	3.2199	1.4631
C	3.7871	4.1603	-3.5141	C	2.8863	-1.8204	1.4562	H	4.6591	4.7985	1.7659
C	-.0089	.0973	-3.1131	C	5.4661	-2.0479	-1.757	H	2.1584	2.2377	2.8844
C	.4814	.3573	-4.4779	H	4.9504	-.0607	-.7591	H	3.0469	3.6936	3.5144

H	3.9301	2.1344	3.2840	H	3.8094	-3.1060	4.5205	C	-1.5066	-3.9400	-1.2794
H	2.0919	-2.5312	-2.3558	H	4.4118	-1.3235	2.9429	C	-1.4569	-5.1792	-1.9415
H	3.3560	-3.3798	-1.4213	H	5.0631	-3.0414	.1011	C	-1.6647	-5.2554	-3.3386
C	3.8041	-3.2142	-3.5610	H	6.2366	-2.2179	-.9570	C	-1.9187	-4.0544	-4.0437
H	4.2195	-.0181	-3.6346	H	6.0061	-1.6501	.7087	C	-1.9582	-2.8249	-3.3671
C	4.7041	-2.1135	-4.1425	C	.3990	5.0269	1.1337	H	-1.3586	-3.9487	-.1973
H	5.6977	-.6437	-2.8536	C	.8145	6.0827	1.9709	H	-1.2497	-6.0752	-1.3543
H	.0181	5.1556	-2.2083	C	.1475	6.3426	3.1775	N	-1.5275	-6.5137	-4.0064
H	-1.2504	5.9279	-1.2127	C	-.9389	5.5322	3.5478	H	-2.0890	-4.0606	-5.1218
C	-1.7119	5.8806	-3.3551	C	-1.3603	4.4890	2.7069	H	-2.1682	-1.9373	-3.9671
H	-1.9704	2.6937	-3.6367	H	.9632	4.8629	.2090	C	-2.5850	-7.5111	-3.8099
C	-2.5582	4.7849	-4.0190	H	1.6617	6.7035	1.6757	H	-1.3926	-6.3696	-4.9965
H	-3.5006	3.1836	-2.8554	H	.4696	7.1608	3.8216	H	-2.3283	-8.4216	-4.3980
C	1.8077	-2.7002	1.2019	H	-1.4575	5.7126	4.4901	H	-3.5945	-7.1670	-4.1403
C	1.4669	-3.7187	2.1156	H	-2.2037	3.8778	3.0352	H	-2.6565	-7.8017	-2.7392
C	2.1846	-3.8760	3.3106	H	-2.9657	5.5106	.2487	H	4.3844	-4.1411	-3.3639
C	3.2478	-3.0015	3.5916	H	-4.1294	4.7498	-.8661	H	3.0043	-3.5014	-4.2760
C	3.5867	-1.9890	2.6801	H	-3.9269	4.1005	.7748	H	4.3586	-1.7996	-5.1506
H	1.2185	-2.6200	.2843	H	-3.3615	.2248	-.8428	H	5.7456	-2.4765	-4.2771
H	.6350	-4.3878	1.8923	H	-4.0488	-1.3486	-1.3334	H	-2.3335	6.7651	-3.0977
H	1.9186	-4.6639	4.0153	H	-3.2771	-.2923	-2.5525	H	-.9212	6.2525	-4.0406
								H	-2.1877	4.5511	-5.0398
								H	-3.6124	5.1123	-4.1446

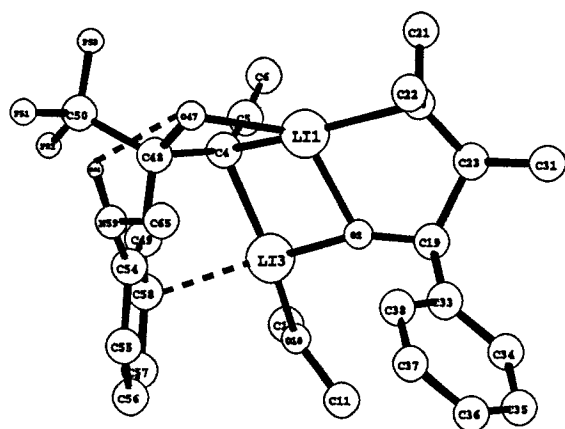


Figure VIIA

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -224.9$  kcal/mol

Li	.0000	.0000	.0000	H	5.3286	-2.0457	.5457
O	2.0519	.0000	.0000	H	6.8237	-2.8732	-1.2211
Li	1.8544	2.0144	.0000	H	6.0553	-2.9578	-3.5997
C	-.2211	2.1063	.3881	H	3.7501	-2.1817	-4.1729
C	-.4482	2.2626	1.5850	H	2.2365	-1.3458	-2.4285
C	-.8142	2.5395	2.9634	H	2.5209	-4.1065	.1793
H	-.8417	3.6346	3.1563	H	3.3232	-3.6195	1.7003
H	-1.8215	2.1312	3.1982	H	1.6857	-4.3076	1.7447
H	-.0929	2.0900	3.6801	O	-1.3251	.8492	-1.5570
O	3.5083	3.1308	.9704	C	-.8933	2.0260	-1.5245
C	4.7873	2.6220	.6701	C	.2978	2.4561	-2.4038
C	3.3534	4.0225	2.0466	C	-2.1133	3.1607	-1.4394
H	4.6991	1.9837	-.2439	F	-2.6979	3.3137	-2.6574
H	5.1949	2.0047	1.5088	F	-1.7197	4.4033	-1.0668
H	5.5168	3.4440	.4583	F	-3.1134	2.8140	-.5943
H	2.2896	4.3622	2.0587	C	.4636	1.9803	-3.7481
H	4.0095	4.9219	1.9380	C	1.6348	2.3440	-4.4831
H	3.5883	3.5354	3.0254	C	2.6060	3.1835	-3.9345
C	2.7297	-1.1044	.3676	C	2.4176	3.7215	-2.6462
N	.3540	-2.1356	.6083	C	1.2743	3.3782	-1.9025
C	-.6697	-2.1077	1.6843	N	-.5176	1.2649	-4.4897
C	-.0511	-2.9669	-.5467	H	1.7811	1.9853	-5.5039
C	1.7735	-2.2007	1.0865	H	3.4949	3.4440	-4.5108
H	-1.6786	-1.8774	1.2564	H	3.1350	4.4443	-2.2517
H	-.4319	-1.3201	2.4422	H	1.0945	3.9474	-.9690
H	-.7558	-3.0795	2.2295	H	-1.4412	1.3276	-4.0991
H	-.9728	-2.5412	-1.0159	C	-.2609	-.1060	-4.9413
H	-.2812	-4.0236	-.2624	H	-1.1361	-.4468	-5.5405
H	.7401	-2.9991	-1.3268	H	-.1127	-.8308	-4.1072
H	1.7611	-1.8492	2.1592	H	.6380	-.1484	-5.5948
C	2.3509	-3.6324	1.1655				
H	3.4526	-.8475	1.2143				
C	3.6330	-1.6465	-.7740				
C	4.9529	-2.0756	-.4792				
C	5.8169	-2.5454	-1.4823				
C	5.3882	-2.5917	-2.8193				
C	4.0924	-2.1572	-3.1376				
C	3.2296	-1.6865	-2.1293				

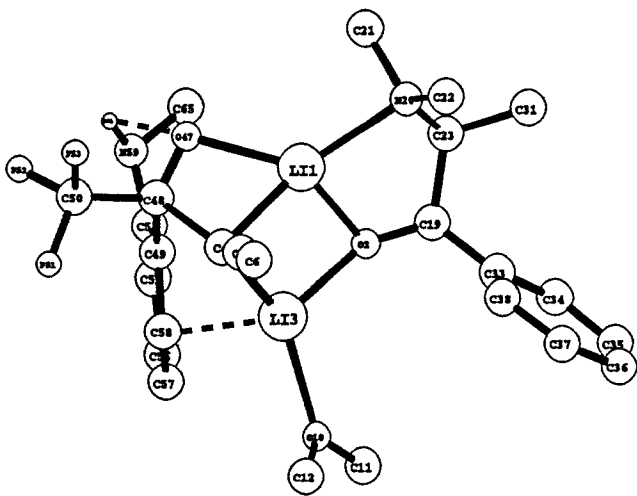


Figure VIIB

(LiCCCH<sub>3</sub>)•[*R,S*-LIOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -224.7$  kcal/mol

O	2.0473	.0000	.0000	C	3.3601	-.7045	-2.5652
Li	1.8697	2.0168	.0000	H	5.2969	-2.1622	-.1531
C	-.2109	2.1218	-.3163	H	6.8843	-2.2683	-2.0269
C	-.5527	2.1996	-1.4940	H	6.2525	-1.3836	-4.2795
C	-1.0409	2.4093	-2.8466	H	3.9931	-.3679	-4.6094
H	-2.0663	1.9968	-2.9692	H	2.3902	-.2388	-2.7556
H	-1.0828	3.4936	-3.0910	H	2.5681	-3.8575	-1.4361
H	-.3879	1.9199	-3.6017	H	3.2518	-4.0078	.2087
O	3.4802	3.1695	-1.0110	H	1.6282	-4.6411	-.1367
C	4.7943	2.7958	-.6692	O	-1.1674	.8600	1.6918
C	3.2684	4.0386	-2.0960	C	-.7419	2.0379	1.6403
H	4.7379	2.0806	.1885	C	.5050	2.4738	2.4356
H	5.4013	3.6822	-.3546	C	-1.9732	3.1644	1.6573
H	5.3232	2.3002	-1.5202	F	-1.6260	4.4094	1.2490
H	2.1735	4.2501	-2.1566	F	-2.4504	3.3143	2.9217
H	3.6016	3.5851	-3.0623	F	-3.0393	2.8063	.9026
H	3.8092	5.0086	-1.9614	C	.7883	1.9713	3.7509
C	2.7132	-1.1679	-.0749	C	1.9833	2.3819	4.4192
N	.3422	-2.1841	-.4421	C	2.8693	3.2886	3.8341
C	-.7599	-2.6283	.4523	C	2.5727	3.8384	2.5721
C	.0552	-2.4551	-1.8671	C	1.4063	3.4464	1.8909
C	1.7236	-2.4447	.0821	N	-.0930	1.1722	4.5322
H	-1.7368	-2.2131	.0959	H	2.2153	2.0067	5.4181
H	-.5961	-2.2752	1.5000	H	3.7753	3.5890	4.3624
H	-.8675	-3.7403	.4892	H	3.2251	4.6051	2.1491
H	-.8183	-1.8391	-2.1971	H	1.1495	4.0110	.9736
H	-.1990	-3.5254	-2.0660	H	-1.0449	1.1920	4.2114
H	.9147	-2.1947	-2.5208	C	.2870	-.1955	4.9005
H	1.6222	-2.5370	1.2027	H	.5681	-.8336	4.0307
C	2.3204	-3.8012	-.3582	H	-.5737	-.6772	5.4177
H	3.3839	-1.2826	.8427	H	1.1465	-.1846	5.6075
C	3.6827	-1.2236	-1.2885				
C	4.9805	-1.7729	-1.1231				
C	5.8971	-1.8329	-2.1861				
C	5.5458	-1.3332	-3.4512				
C	4.2755	-.7656	-3.6337				

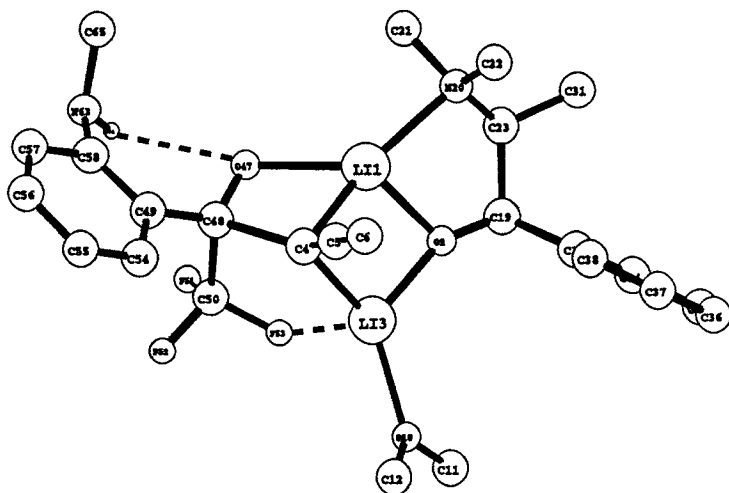


Figure VIIC

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -236.0$  kcal/mol

Li	.0000	.0000	.0000	C	5.7669	-1.4168	-3.1468
O	2.0342	.0000	.0000	C	4.4918	-.9088	-3.4387
Li	1.8439	2.0193	.0000	C	3.5104	-.8213	-2.4326
C	-.2708	2.0943	-.4594	H	5.3414	-2.0653	.1738
C	-.3798	2.0470	-1.6834	H	7.0446	-2.2202	-1.5924
C	-.6095	2.1173	-3.1171	H	6.5254	-1.4867	-3.9264
H	-1.5985	1.6837	-3.3847	H	4.2575	-.5773	-4.4512
H	-.6009	3.1723	-3.4709	H	2.5388	-.4056	-2.7079
H	.1659	1.5659	-3.6917	H	2.6231	-3.8590	-1.2810
O	3.4227	3.3866	-.6542	H	3.3138	-3.9863	.3630
C	4.6976	3.0484	-1.600	H	1.6971	-4.6419	.0289
C	3.2860	4.4478	-1.5646	O	-1.1854	.9516	1.6456
H	4.5757	2.2034	.5629	C	-1.1271	2.1756	1.4164
H	5.1733	3.9094	.3739	C	-2.3799	3.0213	1.2128
H	5.3862	2.7269	-.9808	C	.0673	2.9703	2.3039
H	2.1985	4.5667	-1.7902	F	.0824	2.5536	3.5928
H	3.8306	4.2465	-2.5208	F	-.0451	4.3192	2.3579
H	3.6683	5.4103	-1.1419	F	1.3314	2.7386	1.8171
C	2.7316	-1.1490	.0419	C	-2.3710	4.1124	.3047
N	.3762	-2.2100	-.2842	C	-3.5143	4.8779	.0394
C	-.7059	-2.6400	.6381	C	-4.7174	4.5858	.7020
C	.0760	-2.5117	-1.6999	C	-4.7559	3.5471	1.6387
C	1.7679	-2.4421	.2270	C	-3.6017	2.7601	1.9175
H	-1.6960	-2.2635	.2754	H	-1.4545	4.3924	-.2192
H	-.5401	-2.2359	1.6668	H	-3.4662	5.6992	-.6757
H	-.7891	-3.7515	.7237	H	-5.6136	5.1734	.4990
H	-.8230	-1.9301	-2.0268	H	-5.6923	3.3641	2.1693
H	-.1475	-3.5923	-1.8799	N	-3.7512	1.8271	2.9857
H	.9176	-2.2321	-2.3697	H	-2.8801	1.5913	3.4286
H	1.6797	-2.5209	1.3493	C	-4.5574	.6202	2.7773
C	2.3783	-3.7956	-.2027	H	-4.4900	-.0155	3.6891
H	3.3523	-1.1869	.9999	H	-4.2340	.0057	1.9048
C	3.7714	-1.2507	-1.1096	H	-5.6266	.8891	2.6251
C	5.0734	-1.7436	-.8349				
C	6.0553	-1.8310	-1.8357				

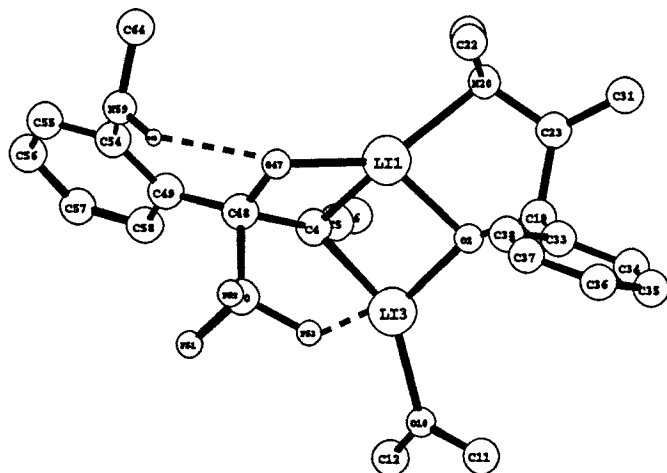


Figure XVD

$(\text{LiCCCH}_3) \cdot [R,S\text{-LiOCH(Ph)CH(Me)NMe}_2] \cdot (\text{Me}_2\text{O}) \cdot (\text{ortho-HNMe-PhCOCF}_3)$   
 $\Delta H_f^\circ = -236.5 \text{ kcal/mol}$

Li	.0000	.0000	.0000	C	4.8774	-2.4074	-3.4522
O	2.0380	.0000	.0000	C	3.5846	-1.8725	-3.5621
Li	1.8516	2.0164	.0000	C	2.8752	-1.4758	-2.4121
C	-.2872	2.0681	.4782	H	5.2436	-2.2428	-.0665
C	-.2370	2.1690	1.7018	H	6.4670	-2.9423	-2.0805
C	-.3011	2.3757	3.1393	H	5.4250	-2.7156	-4.3428
H	-.2843	3.4601	3.3883	H	3.1252	-1.7589	-4.5449
H	-1.2387	1.9515	3.5619	H	1.8782	-1.0510	-2.5530
H	.5519	1.8974	3.6679	H	2.4513	-4.1436	-.1450
O	3.4607	3.3759	.5899	H	3.3560	-3.7319	1.3399
C	4.7363	2.9122	.2120	H	1.7183	-4.4115	1.4612
C	3.3416	4.5588	1.3382	O	-1.2021	.8785	-1.6320
H	4.5997	2.0133	-.4397	C	-1.1843	2.1020	-1.3951
H	5.3481	2.6255	1.1040	C	-2.4663	2.9001	-1.1841
H	5.3041	3.6864	-.3628	C	-.0150	2.9420	-2.2754
H	2.2532	4.7637	1.4830	F	-.1625	4.2882	-2.3053
H	3.8001	5.4327	.8119	F	.0032	2.5475	-3.5711
H	3.8253	4.4636	2.3424	F	1.2579	2.7351	-1.7995
C	2.7062	-1.1551	.1738	C	-3.6783	2.5971	-1.8899
N	.3382	-2.1763	.5042	C	-4.8621	3.3358	-1.6033
C	-.6188	-2.1815	1.6391	C	-4.8632	4.3675	-.6581
C	-.1455	-2.9598	-.6539	C	-3.6714	4.7015	.0049
C	1.7830	-2.2771	.8961	C	-2.4992	3.9838	-.2681
H	-1.6464	-1.9143	1.2827	N	-3.7929	1.6686	-2.9661
H	-.3232	-1.4344	2.4168	H	-5.7914	3.1204	-2.1342
H	-.6936	-3.1759	2.1437	H	-5.7817	4.9174	-.4490
H	-1.0840	-2.5024	-1.0550	H	-3.6543	5.5185	.7263
H	-.3803	-4.0216	-.3933	H	-1.5940	4.2974	.2558
H	.5991	-2.9784	-1.4786	C	-4.5510	.4290	-2.7679
H	1.8379	-1.9784	1.9832	H	-2.9142	1.4712	-3.4127
C	2.3503	-3.7143	.8708	H	-4.2024	-.1803	-1.9015
H	3.5345	-1.0079	.9462	H	-4.4601	-.1951	-3.6857
C	3.4353	-1.6130	-1.1192	H	-5.6296	.6545	-2.6120
C	4.7498	-2.1393	-1.0350				
C	5.4598	-2.5361	-2.1804				

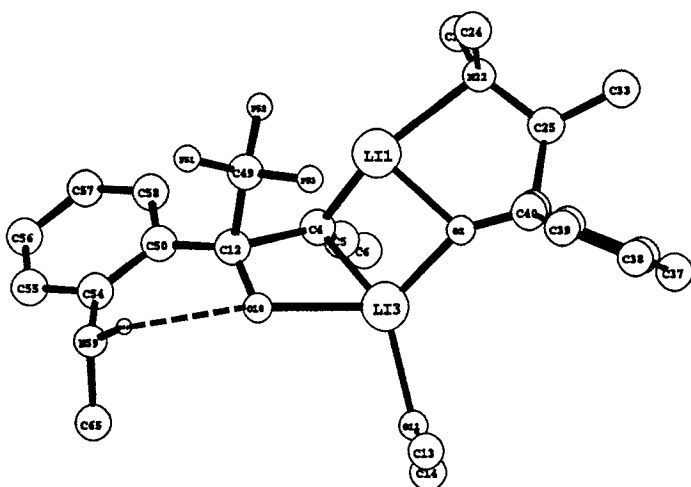


Figure XVE

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -232.2$  kcal/mol

Li	.0000	.0000	.0000	C	5.8891	-2.5268	-1.3904
O	2.0749	.0000	.0000	C	5.4639	-2.6305	-2.7252
Li	1.8723	2.0141	.0000	C	4.1612	-2.2314	-3.0607
C	-.1574	2.0070	.7608	C	3.2877	-1.7398	-2.0716
C	.0696	2.2354	1.9464	H	5.3891	-1.9593	.6164
C	.2022	2.5394	3.3602	H	6.9015	-2.8254	-1.1161
H	1.1176	2.0863	3.7989	H	6.1391	-3.0127	-3.4908
H	.2566	3.6381	3.5282	H	3.8213	-2.2987	-4.0950
H	-.6696	2.1565	3.9354	H	2.2906	-1.4272	-2.3875
O	.3910	3.1793	-1.4538	H	3.4196	-3.5033	1.8590
O	3.6127	3.3005	.0830	H	1.8014	-4.2328	1.9263
C	-.7243	2.7949	-1.0625	H	2.6422	-4.0841	.3582
C	4.3489	3.1458	-1.1089	C	-1.2442	1.3630	-1.7910
C	4.1221	4.0852	1.1292	C	-1.8687	3.7500	-.7541
H	3.7611	2.4861	-1.7980	F	-1.9689	1.5513	-2.9117
H	5.3463	2.6750	-.9200	F	-1.9722	.5279	-.9755
H	4.5214	4.1296	-1.6143	F	-.1787	.5593	-2.1260
H	3.3773	4.0678	1.9612	C	-2.0514	4.9766	-1.4755
H	4.2782	5.1469	.8131	C	-3.1125	5.8549	-1.1133
H	5.0954	3.6887	1.5119	C	-3.9917	5.5396	-.0713
C	2.7752	-1.0733	.4048	C	-3.8409	4.3264	.6194
N	.4198	-2.1503	.6779	C	-2.8025	3.4516	.2725
C	-.6039	-2.1336	1.7536	N	-1.3124	5.3719	-2.6301
C	.0559	-3.0502	-.4380	H	-3.2693	6.7877	-1.6584
C	1.8387	-2.1571	1.1674	H	-4.7956	6.2273	.1939
H	-1.6237	-1.9796	1.3194	H	-4.5296	4.0623	1.4222
H	-.4114	-1.3018	2.4754	H	-2.7356	2.5187	.8362
H	-.6388	-3.0839	2.3409	H	-.8908	4.5967	-3.1116
H	.8436	-3.0726	-1.2213	C	-.3604	6.4823	-2.5230
H	-.8887	-2.6951	-.9196	H	.1616	6.5990	-3.4997
H	-.1205	-4.1048	-.1109	H	.4144	6.3397	-1.7339
H	1.8082	-1.7545	2.2214	H	-.8965	7.4328	-2.3045
C	2.4520	-3.5678	1.3193				
H	3.4962	-.7742	1.2396				
C	3.6873	-1.6429	-.7178				
C	5.0147	-2.0360	-.4067				



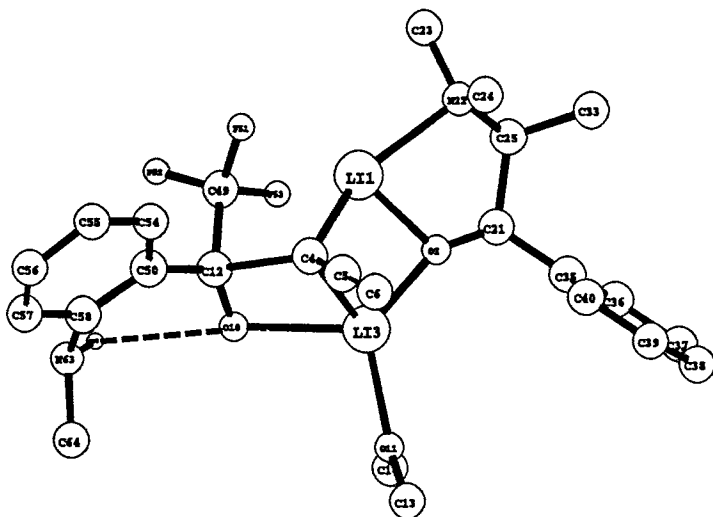


Figure XVF

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -231.9$  kcal/mol

Li	.0000	.0000	.0000	C	4.0300	-1.0747	-.8846
O	2.0677	.0000	.0000	C	5.2831	-1.5367	-.4060
Li	1.8811	2.0065	.0000	C	6.4417	-1.4770	-1.1985
C	-.1678	2.0165	-.7199	C	6.3828	-.9447	-2.4973
C	.0273	2.2701	-1.9061	C	5.1567	-.4698	-2.9877
C	.1165	2.6083	-3.3156	C	3.9976	-.5294	-2.1903
H	-.7269	2.1635	-3.8884	H	5.3715	-1.9513	.6005
H	.0762	3.7106	-3.4627	H	7.3892	-1.8444	-.8027
H	1.0613	2.2427	-3.7731	H	7.2793	-.8999	-3.1156
O	.4228	3.1590	1.4965	H	5.0990	-.0512	-3.9933
O	3.5854	3.3441	-.0563	H	3.0694	-.1411	-2.6145
C	-.6969	2.7716	1.1205	H	3.4676	-3.9513	-.3826
C	4.0195	4.2207	-1.0630	H	1.8740	-4.5416	-.8923
C	4.3408	3.1935	1.1236	H	2.7716	-3.4095	-1.9386
H	3.2788	4.1737	-1.8977	C	-1.1946	1.3289	1.8451
H	5.0248	3.9339	-1.4606	C	-1.8540	3.7239	.8496
H	4.0775	5.2763	-.6970	F	-1.9334	.4991	1.0328
H	3.8156	2.4536	1.7809	F	-1.9015	1.5017	2.9796
H	4.4355	4.1619	1.6770	F	-.1200	.5277	2.1537
H	5.3722	2.8169	.9080	C	-2.8107	3.4311	-.1573
C	2.7847	-1.1341	.0459	C	-3.8620	4.3035	-.4701
N	.4683	-2.1743	-.5465	C	-4.0027	5.5085	.2368
C	-.5705	-2.9531	.1690	C	-3.1006	5.8177	1.2609
C	.1873	-2.0392	-1.9949	C	-2.0266	4.9415	1.5884
C	1.8749	-2.4704	-.1151	H	-2.7528	2.5045	-.7324
H	-1.5898	-2.5817	-.0989	H	-4.5682	4.0438	-1.2589
H	-.4516	-2.8481	1.2732	H	-4.8165	6.1945	-.0018
H	-.5463	-4.0444	-.0699	H	-3.2494	6.7437	1.8196
H	.9984	-1.4911	-2.5244	N	-1.2632	5.3291	2.7298
H	-.7672	-1.4700	-2.1455	C	-.3185	6.4445	2.6114
H	.0625	-3.0242	-2.5099	H	-.8275	4.5511	3.1941
H	1.7980	-2.8417	.9470	H	.4374	6.3138	1.8022
C	2.5270	-3.6430	-.8840	H	.2268	6.5532	3.5763
H	3.2134	-1.2759	1.0955	H	-.8636	7.3950	2.4162

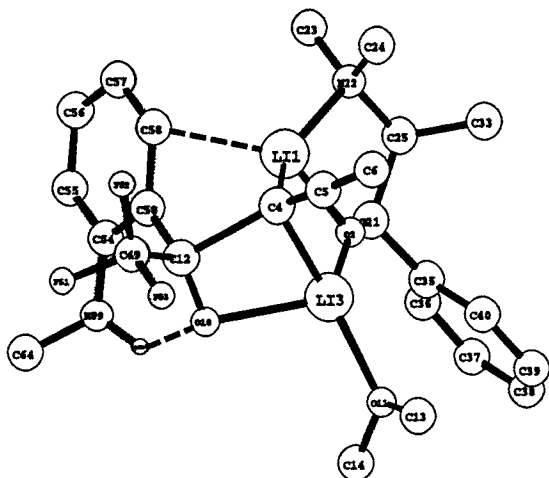


Figure XVG

(LiCCCH<sub>3</sub>)•[R,S-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -224.7$  kcal/mol

Li	.0000	.0000	.0000	C	5.0329	-1.8579	.9229
O	2.0354	.0000	.0000	C	6.4334	-1.7926	.8324
Li	1.8983	2.0152	.0000	C	7.0418	-.9430	-.1066
C	-.2746	2.0157	-.4030	C	6.2354	-.1618	-.9491
C	-.3806	2.3713	-1.5727	C	4.8319	-.2275	-.8565
C	-.6266	2.8495	-2.9217	H	4.5963	-2.5261	1.6680
H	-1.6182	2.5077	-3.2917	H	7.0488	-2.4030	1.4942
H	-.6193	3.9610	-2.9570	H	8.1281	-.8912	-.1797
H	.1422	2.4837	-3.6365	H	6.6978	.4997	-1.6829
O	.7869	2.8931	1.7665	H	4.2454	.3924	-1.5401
O	3.4192	3.5329	-.3560	H	3.7035	-2.9834	-1.9075
C	-.3529	2.4100	1.5873	H	2.1271	-3.4878	-2.5385
C	3.4242	4.5138	-1.3615	H	2.6362	-1.7762	-2.6776
C	4.2533	3.6778	.7705	C	-1.5399	3.5896	1.6035
H	2.7379	4.1713	-2.1736	C	-.8086	1.0926	2.2541
H	4.4447	4.6548	-1.7978	F	-1.8289	3.9393	2.8856
H	3.0673	5.5028	-.9809	F	-2.7254	3.2406	1.0470
H	4.1019	2.7855	1.4299	F	-1.1609	4.7346	.9867
H	4.0118	4.6039	1.3499	C	-.4003	.7148	3.5796
H	5.3325	3.7248	.4773	C	-.9669	-.4460	4.1905
C	2.6570	-1.1714	.2334	C	-1.9132	-1.2321	3.5282
N	.5349	-2.3034	-.5989	C	-2.3130	-.8864	2.2244
C	-.1262	-3.4625	.0340	C	-1.7673	.2480	1.5967
C	-.1728	-1.8251	-1.8121	N	.5988	1.3525	4.3714
C	2.0353	-2.3989	-.6152	H	-.6544	-.7458	5.1935
H	-1.2279	-3.3030	.0957	H	-2.3386	-2.1092	4.0177
H	.2480	-3.5994	1.0742	H	-3.0741	-1.4796	1.7137
H	.0372	-4.4193	-.5189	H	-2.2109	.5287	.6214
H	.3515	-.9598	-2.2948	C	.2127	2.2046	5.4987
H	-1.2175	-1.5005	-1.5405	H	1.3288	1.7828	3.8313
H	-.2878	-2.6153	-2.5956	H	-.1010	3.2297	5.1937
H	2.3165	-3.3102	-.0165	H	1.0949	2.3063	6.1723
C	2.6468	-2.6601	-2.0101	H	-.6185	1.7534	6.0834
H	2.4865	-1.4894	1.3173				
C	4.1989	-1.0809	.0794				

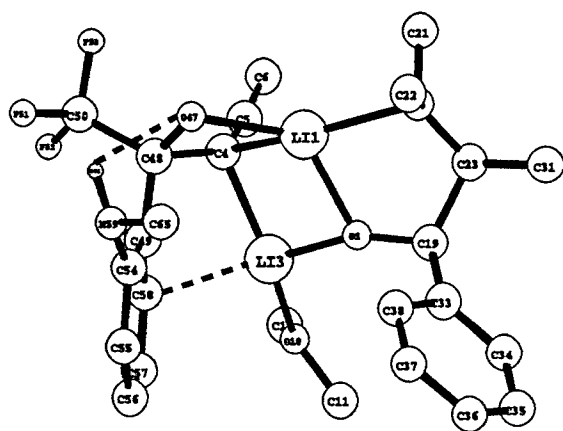


Figure VIIA

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -224.9$  kcal/mol

Li	.0000	.0000	.0000	H	5.3286	-2.0457	.5457
O	2.0519	.0000	.0000	H	6.8237	-2.8732	-1.2211
Li	1.8544	2.0144	.0000	H	6.0553	-2.9578	-3.5997
C	-.2211	2.1063	.3881	H	3.7501	-2.1817	-4.1729
C	-.4482	2.2626	1.5850	H	2.2365	-1.3458	-2.4285
C	-.8142	2.5395	2.9634	H	2.5209	-4.1065	.1793
H	-.8417	3.6346	3.1563	H	3.3232	-3.6195	1.7003
H	-1.8215	2.1312	3.1982	H	1.6857	-4.3076	1.7447
H	-.0929	2.0900	3.6801	O	-1.3251	.8492	-1.5570
O	3.5083	3.1308	.9704	C	-.8933	2.0260	-1.5245
C	4.7873	2.6220	.6701	C	.2978	2.4561	-2.4038
C	3.3534	4.0225	2.0466	C	-2.1133	3.1607	-1.4394
H	4.6991	1.9837	-.2439	F	-2.6979	3.3137	-2.6574
H	5.1949	2.0047	1.5088	F	-1.7197	4.4033	-1.0668
H	5.5168	3.4440	.4583	F	-3.1134	2.8140	-.5943
H	2.2896	4.3622	2.0587	C	.4636	1.9803	-3.7481
H	4.0095	4.9219	1.9380	C	1.6348	2.3440	-4.4831
H	3.5883	3.5354	3.0254	C	2.6060	3.1835	-3.9345
C	2.7297	-1.1044	.3676	C	2.4176	3.7215	-2.6462
N	.3540	-2.1356	.6083	C	1.2743	3.3782	-1.9025
C	-.6697	-2.1077	1.6843	N	-.5176	1.2649	-4.4897
C	-.0511	-2.9669	-.5467	H	1.7811	1.9853	-5.5039
C	1.7735	-2.2007	1.0865	H	3.4949	3.4440	-4.5108
H	-1.6786	-1.8774	1.2564	H	3.1350	4.4443	-2.2517
H	-.4319	-1.3201	2.4422	H	1.0945	3.9474	-.9690
H	-.7558	-3.0795	2.2295	H	-1.4412	1.3276	-4.0991
H	-.9728	-2.5412	-1.0159	C	-.2609	-1.060	-4.9413
H	-.2812	-4.0236	-.2624	H	-1.1361	-.4468	-5.5405
H	.7401	-2.9991	-1.3268	H	-.1127	-.8308	-4.1072
H	1.7611	-1.8492	2.1592	H	.6380	-.1484	-5.5948
C	2.3509	-3.6324	1.1655				
H	3.4526	-.8475	1.2143				
C	3.6330	-1.6465	-.7740				
C	4.9529	-2.0756	-.4792				
C	5.8169	-2.5454	-1.4823				
C	5.3882	-2.5917	-2.8193				
C	4.0924	-2.1572	-3.1376				
C	3.2296	-1.6865	-2.1293				

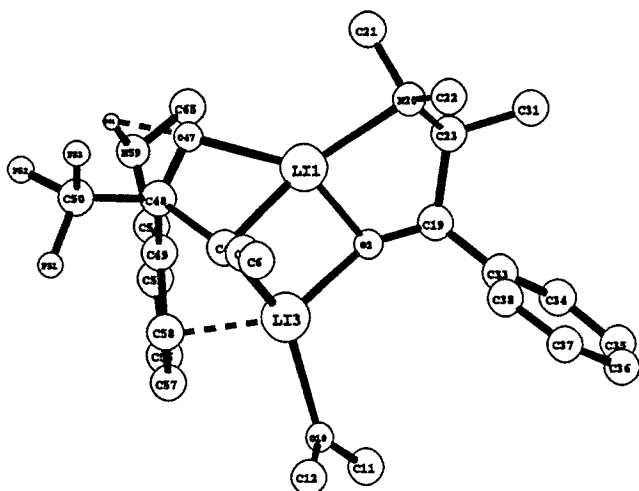


Figure VIIB

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -224.7$  kcal/mol

O	2.0473	.0000	.0000	C	3.3601	-.7045	-2.5652
Li	1.8697	2.0168	.0000	H	5.2969	-2.1622	-.1531
C	-.2109	2.1218	-.3163	H	6.8843	-2.2683	-2.0269
C	-.5527	2.1996	-1.4940	H	6.2525	-1.3836	-4.2795
C	-1.0409	2.4093	-2.8466	H	3.9931	-.3679	-4.6094
H	-2.0663	1.9968	-2.9692	H	2.3902	-.2388	-2.7556
H	-1.0828	3.4936	-3.0910	H	2.5681	-3.8575	-1.4361
H	-.3879	1.9199	-3.6017	H	3.2518	-4.0078	.2087
O	3.4802	3.1695	-1.0110	H	1.6282	-4.6411	-.1367
C	4.7943	2.7958	-.6692	O	-1.1674	.8600	1.6918
C	3.2684	4.0386	-2.0960	C	-.7419	2.0379	1.6403
H	4.7379	2.0806	.1885	C	.5050	2.4738	2.4356
H	5.4013	3.6822	-.3546	C	-1.9732	3.1644	1.6573
H	5.3232	2.3002	-1.5202	F	-1.6260	4.4094	1.2490
H	2.1735	4.2501	-2.1566	F	-2.4504	3.3143	2.9217
H	3.6016	3.5851	-3.0623	F	-3.0393	2.8063	.9026
H	3.8092	5.0086	-1.9614	C	.7883	1.9713	3.7509
C	2.7132	-1.1679	-.0749	C	1.9833	2.3819	4.4192
N	.3422	-2.1841	-.4421	C	2.8693	3.2886	3.8341
C	-.7599	-2.6283	.4523	C	2.5727	3.8384	2.5721
C	.0552	-2.4551	-1.8671	C	1.4063	3.4464	1.8909
C	1.7236	-2.4447	.0821	N	-.0930	1.1722	4.5322
H	-1.7368	-2.2131	.0959	H	2.2153	2.0067	5.4181
H	-.5961	-2.2752	1.5000	H	3.7753	3.5890	4.3624
H	-.8675	-3.7403	.4892	H	3.2251	4.6051	2.1491
H	-.8183	-1.8391	-2.1971	H	1.1495	4.0110	.9736
H	-.1990	-3.5254	-2.0660	H	-1.0449	1.1920	4.2114
H	.9147	-2.1947	-2.5208	C	.2870	-.1955	4.9005
H	1.6222	-2.5370	1.2027	H	.5681	-.8336	4.0307
C	2.3204	-3.8012	-.3582	H	-.5737	-.6772	5.4177
H	3.3839	-1.2826	.8427	H	1.1465	-.1846	5.6075
C	3.6827	-1.2236	-1.2885				
C	4.9805	-1.7729	-1.1231				
C	5.8971	-1.8329	-2.1861				
C	5.5458	-1.3332	-3.4512				
C	4.2755	-.7656	-3.6337				

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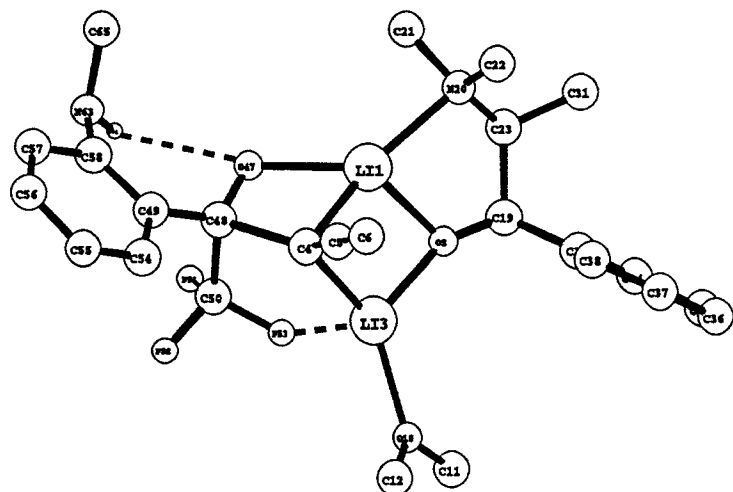


Figure VIIC

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -236.0$  kcal/mol

Li	.0000	.0000	.0000	C	5.7669	-1.4168	-3.1468
O	2.0342	.0000	.0000	C	4.4918	-.9088	-3.4387
Li	1.8439	2.0193	.0000	C	3.5104	-.8213	-2.4326
C	-.2708	2.0943	-.4594	H	5.3414	-2.0653	.1738
C	-.3798	2.0470	-1.6834	H	7.0446	-2.2202	-1.5924
C	-.6095	2.1173	-3.1171	H	6.5254	-1.4867	-3.9264
H	-1.5985	1.6837	-3.3847	H	4.2575	-.5773	-4.4512
H	-.6009	3.1723	-3.4709	H	2.5388	-.4056	-2.7079
H	.1659	1.5659	-3.6917	H	2.6231	-3.8590	-1.2810
O	3.4227	3.3866	-.6542	H	3.3138	-3.9863	.3630
C	4.6976	3.0484	-.1600	H	1.6971	-4.6419	.0289
C	3.2860	4.4478	-1.5646	O	-1.1854	.9516	1.6456
H	4.5757	2.2034	.5629	C	-1.1271	2.1756	1.4164
H	5.1733	3.9094	.3739	C	-2.3799	3.0213	1.2128
H	5.3862	2.7269	-.9808	C	.0673	2.9703	2.3039
H	2.1985	4.5667	-1.7902	F	.0824	2.5536	3.5928
H	3.8306	4.2465	-2.5208	F	-.0451	4.3192	2.3579
H	3.6683	5.4103	-1.1419	F	1.3314	2.7386	1.8171
C	2.7316	-1.1490	.0419	C	-2.3710	4.1124	.3047
N	.3762	-2.2100	-.2842	C	-3.5143	4.8779	.0394
C	-.7059	-2.6400	.6381	C	-4.7174	4.5858	.7020
C	.0760	-2.5117	-1.6999	C	-4.7559	3.5471	1.6387
C	1.7679	-2.4421	.2270	C	-3.6017	2.7601	1.9175
H	-1.6960	-2.2635	.2754	H	-1.4545	4.3924	-.2192
H	-.5401	-2.2359	1.6668	H	-3.4662	5.6992	-.6757
H	-.7891	-3.7515	.7237	H	-5.6136	5.1734	.4990
H	-.8230	-1.9301	-2.0268	H	-5.6923	3.3641	2.1693
H	-.1475	-3.5923	-1.8799	N	-3.7512	1.8271	2.9857
H	.9176	-2.2321	-2.3697	H	-2.8801	1.5913	3.4286
H	1.6797	-2.5209	1.3493	C	-4.5574	.6202	2.7773
C	2.3783	-3.7956	-.2027	H	-4.4900	-.0155	3.6891
H	3.3523	-1.1869	.9999	H	-4.2340	.0057	1.9048
C	3.7714	-1.2507	-1.1096	H	-5.6266	.8891	2.6251
C	5.0734	-1.7436	-.8349				
C	6.0553	-1.8310	-1.8357				

S b)

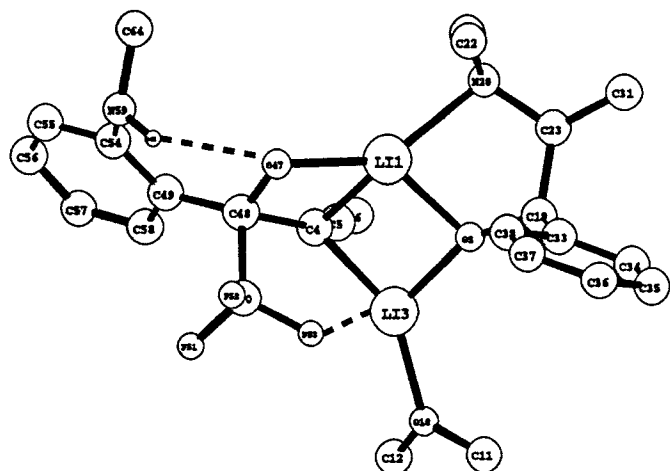


Figure XVD

(LiCCCH<sub>3</sub>)•[*R,S*-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -236.5$  kcal/mol

Li	.0000	.0000	.0000	C	4.8774	-2.4074	-3.4522
O	2.0380	.0000	.0000	C	3.5846	-1.8725	-3.5621
Li	1.8516	2.0164	.0000	C	2.8752	-1.4758	-2.4121
C	-.2872	2.0681	.4782	H	5.2436	-2.2428	-.0665
C	-.2370	2.1690	1.7018	H	6.4670	-2.9423	-2.0805
C	-.3011	2.3757	3.1393	H	5.4250	-2.7156	-4.3428
H	-.2843	3.4601	3.3883	H	3.1252	-1.7589	-4.5449
H	-1.2387	1.9515	3.5619	H	1.8782	-1.0510	-2.5530
H	.5519	1.8974	3.6679	H	2.4513	-4.1436	-.1450
O	3.4607	3.3759	.5899	H	3.3560	-3.7319	1.3399
C	4.7363	2.9122	.2120	H	1.7183	-4.4115	1.4612
C	3.3416	4.5588	1.3382	O	-1.2021	.8785	-1.6320
H	4.5997	2.0133	-.4397	C	-1.1843	2.1020	-1.3951
H	5.3481	2.6255	1.1040	C	-2.4663	2.9001	-1.1841
H	5.3041	3.6864	-.3628	C	-.0150	2.9420	-2.2754
H	2.2532	4.7637	1.4830	F	-.1625	4.2882	-2.3053
H	3.8001	5.4327	.8119	F	.0032	2.5475	-3.5711
H	3.8253	4.4636	2.3424	F	1.2579	2.7351	-1.7995
C	2.7062	-1.1551	.1738	C	-3.6783	2.5971	-1.8899
N	.3382	-2.1763	.5042	C	-4.8621	3.3358	-1.6033
C	-.6188	-2.1815	1.6391	C	-4.8632	4.3675	-.6581
C	-.1455	-2.9598	-.6539	C	-3.6714	4.7015	.0049
C	1.7830	-2.2771	.8961	C	-2.4992	3.9838	-.2681
H	-1.6464	-1.9143	1.2827	N	-3.7929	1.6686	-2.9661
H	-.3232	-1.4344	2.4168	H	-5.7914	3.1204	-2.1342
H	-.6936	-3.1759	2.1437	H	-5.7817	4.9174	-.4490
H	-1.0840	-2.5024	-1.0550	H	-3.6543	5.5185	.7263
H	-.3803	-4.0216	-.3933	H	-1.5940	4.2974	.2558
H	.5991	-2.9784	-1.4786	C	-4.5510	.4290	-2.7679
H	1.8379	-1.9784	1.9832	H	-2.9142	1.4712	-3.4127
C	2.3503	-3.7143	.8708	H	-4.2024	-1.803	-1.9015
H	3.5345	-1.0079	.9462	H	-4.4601	-1.951	-3.6857
C	3.4353	-1.6130	-1.1192	H	-5.6296	.6545	-2.6120
C	4.7498	-2.1393	-1.0350				
C	5.4598	-2.5361	-2.1804				

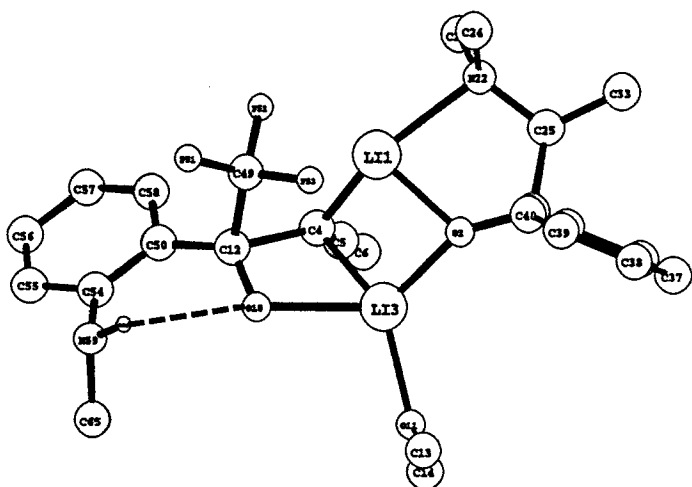


Figure XVE

(LiCCCH<sub>3</sub>)•[R,S-LIOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -232.2$  kcal/mol

Li	.0000	.0000	.0000	C	5.8891	-2.5268	-1.3904
O	2.0749	.0000	.0000	C	5.4639	-2.6305	-2.7252
Li	1.8723	2.0141	.0000	C	4.1612	-2.2314	-3.0607
C	-.1574	2.0070	.7608	C	3.2877	-1.7398	-2.0716
C	.0696	2.2354	1.9464	H	5.3891	-1.9593	.6164
C	.2022	2.5394	3.3602	H	6.9015	-2.8254	-1.1161
H	1.1176	2.0863	3.7989	H	6.1391	-3.0127	-3.4908
H	.2566	3.6381	3.5282	H	3.8213	-2.2987	-4.0950
H	-.6696	2.1565	3.9354	H	2.2906	-1.4272	-2.3875
O	.3910	3.1793	-1.4538	H	3.4196	-3.5033	1.8590
O	3.6127	3.3005	.0830	H	1.8014	-4.2328	1.9263
C	-.7243	2.7949	-1.0625	H	2.6422	-4.0841	.3582
C	4.3489	3.1458	-1.1089	C	-1.2442	1.3630	-1.7910
C	4.1221	4.0852	1.1292	C	-1.8687	3.7500	-.7541
H	3.7611	2.4861	-1.7980	F	-1.9689	1.5513	-2.9117
H	5.3463	2.6750	-.9200	F	-1.9722	.5279	-.9755
H	4.5214	4.1296	-1.6143	F	-.1787	.5593	-2.1260
H	3.3773	4.0678	1.9612	C	-2.0514	4.9766	-1.4755
H	4.2782	5.1469	.8131	C	-3.1125	5.8549	-1.1133
H	5.0954	3.6887	1.5119	C	-3.9917	5.5396	-.0713
C	2.7752	-1.0733	.4048	C	-3.8409	4.3264	.6194
N	.4198	-2.1503	.6779	C	-2.8025	3.4516	.2725
C	-.6039	-2.1336	1.7536	N	-1.3124	5.3719	-2.6301
C	.0559	-3.0502	-.4380	H	-3.2693	6.7877	-1.6584
C	1.8387	-2.1571	1.1674	H	-4.7956	6.2273	.1939
H	-1.6237	-1.9796	1.3194	H	-4.5296	4.0623	1.4222
H	-.4114	-1.3018	2.4754	H	-2.7356	2.5187	.8362
H	-.6388	-3.0839	2.3409	H	-.8908	4.5967	-3.1116
H	.8436	-3.0726	-1.2213	C	-.3604	6.4823	-2.5230
H	-.8887	-2.6951	-.9196	H	.1616	6.5990	-3.4997
H	-.1205	-4.1048	-.1109	H	.4144	6.3397	-1.7339
H	1.8082	-1.7545	2.2214	H	-.8965	7.4328	-2.3045
C	2.4520	-3.5678	1.3193				
H	3.4962	-.7742	1.2396				
C	3.6873	-1.6429	-.7178				
C	5.0147	-2.0360	-.4067				

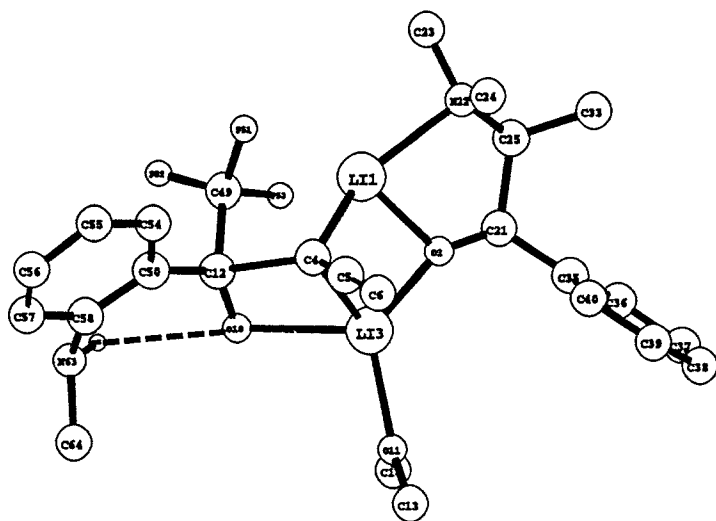


Figure XVF

$(\text{LiCCCH}_3) \cdot [R,S\text{-LiOCH}(\text{Ph})\text{CH}(\text{Me})\text{NMe}_2] \cdot (\text{Me}_2\text{O}) \cdot (\text{ortho-HNMe-PhCOCF}_3)$   
 $\Delta H_f^\circ = -231.9 \text{ kcal/mol}$

Li	.0000	.0000	.0000	C	4.0300	-1.0747	-.8846
O	2.0677	.0000	.0000	C	5.2831	-1.5367	-.4060
Li	1.8811	2.0065	.0000	C	6.4417	-1.4770	-1.1985
C	-.1678	2.0165	-.7199	C	6.3828	-.9447	-2.4973
C	.0273	2.2701	-1.9061	C	5.1567	-.4698	-2.9877
C	.1165	2.6083	-3.3156	C	3.9976	-.5294	-2.1903
H	-.7269	2.1635	-3.8884	H	5.3715	-1.9513	.6005
H	.0762	3.7106	-3.4627	H	7.3892	-1.8444	-.8027
H	1.0613	2.2427	-3.7731	H	7.2793	-.8999	-3.1156
O	.4228	3.1590	1.4965	H	5.0990	-.0512	-3.9933
O	3.5854	3.3441	-.0563	H	3.0694	-.1411	-2.6145
C	-.6969	2.7716	1.1205	H	3.4676	-3.9513	-.3826
C	4.0195	4.2207	-1.0630	H	1.8740	-4.5416	-.8923
C	4.3408	3.1935	1.1236	H	2.7716	-3.4095	-1.9386
H	3.2788	4.1737	-1.8977	C	-1.1946	1.3289	1.8451
H	5.0248	3.9339	-1.4606	C	-1.8540	3.7239	.8496
H	4.0775	5.2763	-.6970	F	-1.9334	.4991	1.0328
H	3.8156	2.4536	1.7809	F	-1.9015	1.5017	2.9796
H	4.4355	4.1619	1.6770	F	-.1200	.5277	2.1537
H	5.3722	2.8169	.9080	C	-2.8107	3.4311	-.1573
C	2.7847	-1.1341	.0459	C	-3.8620	4.3035	-.4701
N	.4683	-2.1743	-.5465	C	-4.0027	5.5085	.2368
C	-.5705	-2.9531	.1690	C	-3.1006	5.8177	1.2609
C	.1873	-2.0392	-1.9949	C	-2.0266	4.9415	1.5884
C	1.8749	-2.4704	-.1151	H	-2.7528	2.5045	-.7324
H	-1.5898	-2.5817	-.0989	H	-4.5682	4.0438	-1.2589
H	-.4516	-2.8481	1.2732	H	-4.8165	6.1945	-.0018
H	-.5463	-4.0444	-.0699	H	-3.2494	6.7437	1.8196
H	.9984	-1.4911	-2.5244	N	-1.2632	5.3291	2.7298
H	-.7672	-1.4700	-2.1455	C	-.3185	6.4445	2.6114
H	.0625	-3.0242	-2.5099	H	-.8275	4.5511	3.1941
H	1.7980	-2.8417	.9470	H	.4374	6.3138	1.8022
C	2.5270	-3.6430	-.8840	H	.2268	6.5532	3.5763
H	3.2134	-1.2759	1.0955	H	-.8636	7.3950	2.4162



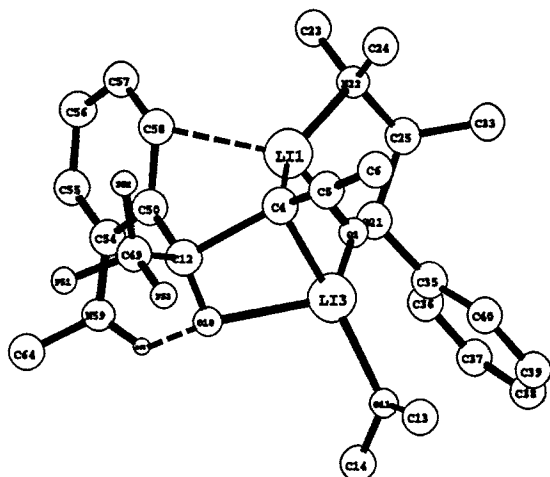


Figure XVG

(LiCCCH<sub>3</sub>)•[R,S-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -224.7$  kcal/mol

Li	.0000	.0000	.0000	C	5.0329	-1.8579	.9229
O	2.0354	.0000	.0000	C	6.4334	-1.7926	.8324
Li	1.8983	2.0152	.0000	C	7.0418	-.9430	-.1066
C	-.2746	2.0157	-.4030	C	6.2354	-.1618	-.9491
C	-.3806	2.3713	-1.5727	C	4.8319	-.2275	-.8565
C	-.6266	2.8495	-2.9217	H	4.5963	-2.5261	1.6680
H	-1.6182	2.5077	-3.2917	H	7.0488	-2.4030	1.4942
H	-.6193	3.9610	-2.9570	H	8.1281	-.8912	-.1797
H	.1422	2.4837	-3.6365	H	6.6978	.4997	-1.6829
O	.7869	2.8931	1.7665	H	4.2454	.3924	-1.5401
O	3.4192	3.5329	-.3560	H	3.7035	-2.9834	-1.9075
C	-.3529	2.4100	1.5873	H	2.1271	-3.4878	-2.5385
C	3.4242	4.5138	-1.3615	H	2.6362	-1.7762	-2.6776
C	4.2533	3.6778	.7705	C	-1.5399	3.5896	1.6035
H	2.7379	4.1713	-2.1736	C	-.8086	1.0926	2.2541
H	4.4447	4.6548	-1.7978	F	-1.8289	3.9393	2.8856
H	3.0673	5.5028	-.9809	F	-2.7254	3.2406	1.0470
H	4.1019	2.7855	1.4299	F	-1.1609	4.7346	.9867
H	4.0118	4.6039	1.3499	C	-.4003	.7148	3.5796
H	5.3325	3.7248	.4773	C	-.9669	-.4460	4.1905
C	2.6570	-1.1714	.2334	C	-1.9132	-1.2321	3.5282
N	.5349	-2.3034	-.5989	C	-2.3130	-.8864	2.2244
C	-.1262	-3.4625	.0340	C	-1.7673	.2480	1.5967
C	-.1728	-1.8251	-1.8121	N	.5988	1.3525	4.3714
C	2.0353	-2.3989	-.6152	H	-.6544	-.7458	5.1935
H	-1.2279	-3.3030	.0957	H	-2.3386	-2.1092	4.0177
H	.2480	-3.5994	1.0742	H	-3.0741	-1.4796	1.7137
H	.0372	-4.4193	-.5189	H	-2.2109	.5287	.6214
H	.3515	-.9598	-2.2948	C	.2127	2.2046	5.4987
H	-1.2175	-1.5005	-1.5405	H	1.3288	1.7828	3.8313
H	-.2878	-2.6153	-2.5956	H	-.1010	3.2297	5.1937
H	2.3165	-3.3102	-.0165	H	1.0949	2.3063	6.1723
C	2.6468	-2.6601	-2.0101	H	-.6185	1.7534	6.0834
H	2.4865	-1.4894	1.3173				
C	4.1989	-1.0809	.0794				

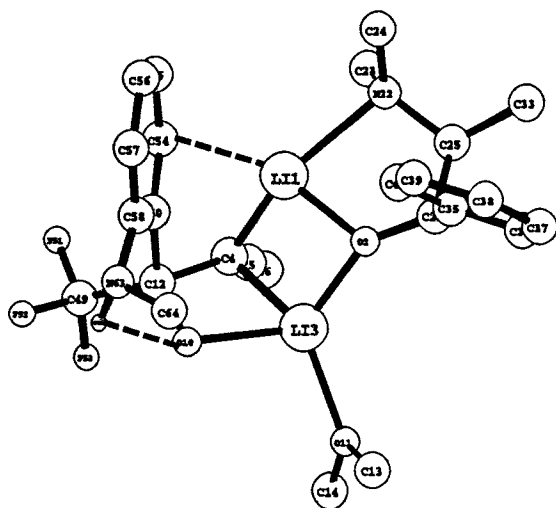


Figure XVH

(LiCCCH<sub>3</sub>)•[R,S-LiOCH(Ph)CH(Me)NMe<sub>2</sub>]•(Me<sub>2</sub>O)•(*ortho*-HNMe-PhCOCF<sub>3</sub>)  
 $\Delta H_f^\circ = -225.5$  kcal/mol

Li	.0000	.0000	.0000	C	3.4540	-1.8202	-.6865
O	2.0298	.0000	.0000	C	4.7861	-2.2698	-.4971
Li	1.8652	2.0297	.0000	C	5.4904	-2.9374	-1.5129
C	-.2851	2.0339	.3988	C	4.8842	-3.1678	-2.7591
C	-.4237	2.3521	1.5761	C	3.5731	-2.7169	-2.9759
C	-.6978	2.7937	2.9323	C	2.8705	-2.0481	-1.9554
H	.0907	2.4616	3.6421	H	5.2985	-2.0984	.4519
H	-.7533	3.9032	2.9843	H	6.5118	-3.2746	-1.3330
H	-1.6685	2.3911	3.2962	H	5.4274	-3.6867	-3.5488
O	.8149	2.9776	-1.7295	H	3.0944	-2.8824	-3.9419
O	3.4822	3.3982	.4570	H	1.8581	-1.7034	-2.1782
C	-.3384	2.5152	-1.5775	H	3.4808	-3.0904	2.3657
C	4.6056	3.1586	-.3580	H	1.8860	-3.8203	2.6548
C	3.3856	4.5972	1.1839	H	2.6728	-4.0046	1.0615
H	4.4546	2.1786	-.8777	C	-1.5075	3.7093	-1.5429
H	5.5443	3.1015	.2490	C	-.7983	1.2344	-2.3055
H	4.7405	3.9587	-1.1286	F	-2.7128	3.3273	-1.0549
H	2.4252	4.5735	1.7536	F	-1.7499	4.1617	-2.8021
H	3.3849	5.4929	.5146	F	-1.1403	4.7990	-.8267
H	4.2285	4.7055	1.9118	C	-1.6883	.3101	-1.6627
C	2.7317	-1.0562	.4558	C	-2.1403	-.8540	-2.3106
N	.4134	-2.0845	1.0050	C	-1.7285	-1.1334	-3.6275
C	-.5927	-1.8049	2.0623	C	-.8902	-.2374	-4.2949
C	.0438	-3.2555	.1822	C	-.4201	.9546	-3.6627
C	1.8403	-1.9635	1.4586	H	-2.1541	.5437	-.6846
H	-1.6148	-1.7267	1.6112	H	-2.8477	-1.5191	-1.8110
H	-.3736	-.8402	2.5839	H	-2.0801	-2.0351	-4.1310
H	-.6408	-2.6014	2.8447	H	-.6161	-.4584	-5.3287
H	.8029	-3.4617	-.6020	N	.3089	1.8314	-4.5178
H	-.9268	-3.0623	-.3343	C	1.6731	1.4797	-4.9276
H	-.0862	-4.1915	.7788	H	.2748	2.7926	-4.2263
H	1.8241	-1.3468	2.4042	H	2.3847	1.3714	-4.0763
C	2.4977	-3.2933	1.8920	H	2.0564	2.2833	-5.5970
H	3.5655	-.6959	1.1469	H	1.6774	.5260	-5.5006

XVI. Assorted heats of formation for ketones and ligands.

<u>Species</u>	<u><math>\Delta H_f^\circ</math> (kcal/mol)</u>
acetone	-49.4
PhCOCH <sub>3</sub>	-16.9
( <i>o</i> -NHMe)C <sub>6</sub> H <sub>4</sub> COCH <sub>3</sub>	-13.2
( <i>p</i> -NHMe)C <sub>6</sub> H <sub>4</sub> COCH <sub>3</sub>	-14.0
( <i>o</i> -NMe <sub>2</sub> )C <sub>6</sub> H <sub>4</sub> COCH <sub>3</sub>	-8.5
( <i>o</i> -NHMe)C <sub>6</sub> H <sub>4</sub> COCF <sub>3</sub>	-153.9
LiCCCH <sub>3</sub>	+23.3
<i>R,S</i> -LiOCH(Ph)CH(Me)N(CH <sub>3</sub> ) <sub>2</sub>	-19.6
<i>R,S</i> -LiOCH(Ph)CH(Me)N(CH <sub>2</sub> ) <sub>4</sub>	-30.4
Me <sub>2</sub> O	-51.2

## Experimental Section

**Reagents and Solvents.** All ethers and hydrocarbons were distilled by vacuum transfer from blue or purple solutions containing sodium benzophenone ketyl. The hydrocarbon stills contained 1% tetraglyme to dissolve the ketyl.  $^6\text{Li}$  metal (95.5% enriched) was obtained from Oak Ridge National Laboratory. The isotopically labelled substrates were prepared using crystalline  $[\text{}^6\text{Li}]$ ethylolithium<sup>1</sup> and isolated as white solids as described below. The diphenylacetic acid used to check solution titers<sup>2</sup> was recrystallized from methanol and sublimed at 120 °C under full vacuum. Air and moisture sensitive materials were manipulated under argon or nitrogen using standard glove box, vacuum line, and syringe techniques.

**NMR Spectroscopic Analyses.** Samples for spectroscopic analyses were prepared using a protocol described in detail elsewhere.<sup>3</sup> Standard  $^6\text{Li}$  and  $^{13}\text{C}$  NMR spectra were recorded on a Varian XL-400 spectrometer operating at 58.84 MHz and 100.58 MHz (respectively) or on a Varian Unity 500 spectrometer operating at 73.57 MHz and 125.76 MHz (respectively). The  $^6\text{Li}$  and  $^{13}\text{C}$  resonances are referenced to 0.3 M  $[\text{}^6\text{Li}]\text{LiCl}/\text{MeOH}$  at -100 °C (0.0 ppm) and the toluene methyl resonance at -100 °C (20.4 ppm), respectively.

**IR Spectroscopic Analyses.** Samples were recorded using a React IR<sup>®</sup> from ASI Applied Systems fitted with a diamond-tipped (DiComp<sup>®</sup>) probe with the ZnSe spectral range. The spectra were acquired in 32 scans per spectrum at a gain of one and a resolution of eight using ReactIR<sup>®</sup> 1.2 software. A representative reaction was carried out as follows: The IR probe was inserted through a nylon adapter and FETFE O-ring seal (Ace Glass) into a 50 mL flask with two 24/40 joints. The second joint was fitted with a thermocouple and an  $\text{N}_2$  inlet and outlet. The flask was dried at 100 °C and cooled to room temperature under positive  $\text{N}_2$  flow. A background spectrum of  $\text{N}_2$  was recorded before adding any reagents. *N*-pyrrolidinyl norephedrine (**4**, 570 mg, 2.8 mmol) and dry THF (5.0 mL) were placed in the flask. The solution was cooled to -10 °C and cyclopropylacetylene (0.26 mL containing 10% cyclohexane, 2.8 mmol) and *n*-BuLi (2.5 M, 2.15 mL, 5.4 mmol) were added by syringe. The mixture was maintained at -10 °C for 25 minutes, then cooled to -95 °C. To this mixture was added ketone **1** (1.0 g, 2.9 mmol) in THF (2.0 mL) over 5 minutes by a motor driven syringe. The internal reaction temperature remained below -90 °C throughout the course of the addition. IR spectra were recorded every 25 seconds over the course of the addition.

**MNDO Calculations.** MNDO calculations were performed on an IBM RISC 6000 cluster using MOPAC<sup>4</sup> with the lithium parameters of Clark and Thiel.<sup>5</sup> All structures were fully optimized without symmetry constraints using the keyword PRECISE. Stationary points were confirmed as minima or maxima by frequency calculations. Each reported heat of

formation is the result of a search from several different initial geometries. Symmetrical structures were optimized from distorted geometries to insure that the symmetry is not a calculational artifact. For more sterically crowded systems, the keyword GEO-OK was used with caution to override the small interatomic distance check.

**Lithium Ephedrate [6Li]4.** A 100 mL round-bottom flask is charged with ephedrine **5** (980 mg, 4.8 mmol) and 50 mL of degassed dry hexanes. A 50 mL pear-flask was charged with [6Li]ethylolithium (170 mg, 4.9 mmol) and 20 mL of degassed dry hexanes; gentle warming dissolves the solids. After cooling the solution containing **5** to 0 °C, the ethyllithium solution is added via a gas-tight syringe over a period of 3 minutes. The opaque, dark orange mixture is stirred for 20 minutes at 0 °C after which it is concentrated to 15-20 mL *in vacuo*. The flask is heated and cooled to redissolve any solids on the wall of the flask and then filtered to yield a clear, yellow solution. The solution is concentrated to 6-8 mL *in vacuo* at 0 °C. The sample is cooled and stirred at 0 °C for 20 minutes after which the resulting precipitate is filtered to yield lithium ephedrate [6Li]4 (490 mg, 49% yield) as a white powder.

**[1-13C]-cyclopropylacetylene.** [1-13C]cyclopropylacetylene used to prepare lithium acetylide [1-13C]4 was synthesized from cyclopropane carboxaldehyde and [13C]CBr4 by a literature procedure.<sup>6</sup> The procedure was modified to use stoichiometric [13C]CBr4 to minimize the cost. The acetylene was isolated in 20% overall yield as a 50% solution in cyclohexane and converted directly to solid [13C]4 as described in the experimental section. The >98% enrichment was confirmed by NMR spectroscopic analysis: <sup>1</sup>H NMR (CDCl<sub>3</sub>, 300 MHz) δ 1.77 (dd, J = 248.8, 2.1 Hz, 1H), 1.42 (s, cyclohexane), 1.32-1.18 (m, 1H), 0.85-0.70 (m, 4H); <sup>13</sup>C{<sup>1</sup>H}NMR (CDCl<sub>3</sub>, 300 MHz) δ 87.76 (d, J<sub>CC</sub> = 174 Hz), 63.35, 26.90 (cyclohexane), 8.09 (d, J<sub>CC</sub> = 1.9), -0.85 (d, J<sub>CC</sub> = 14.2).

**[6Li]Lithium cyclopropylacetylide ([6Li]6).** A 50 mL round-bottom flask is charged with [6Li]ethylolithium (160 mg, 4.5 mmol) and 25 mL of pentane. After heating to dissolve the ethyllithium and cooling to 0 °C, cyclopropylacetylene (300 mg, 4.5 mmol) was added in one portion via a gas-tight syringe. The [6Li]lithium cyclopropylacetylide (**6**) precipitated immediately. The resulting white solid was filtered, washed with 20 mL of pentane, and dried *in vacuo* to yield 200 mg (61% yield) [6Li]6.

**[15N]-labelled norephedrine 3b** was prepared using commercially available [15N]hydroxylamine (98% isotopic purity) as the source of the label via an asymmetric α-amination of propiophenone.<sup>7</sup> The [15N]norephedrine intermediate was converted to the pyrrolidine derivative ([15N]3b) using the procedure of Soai.<sup>8</sup> The spectroscopic data of

( $[^{15}\text{N}]\mathbf{3b}$ ) are as follows:  $^1\text{H}$  NMR ( $\text{CDCl}_3$ , 300 MHz)  $\delta$  7.36-7.20 (m, 5H), 5.01 (d,  $J = 3.0$  Hz, 1H), 3.60 (br s, 1H), 2.83-2.76 (m, 2H), 2.68-2.62 (m, 2H), 2.48 (dq,  $J = 6.4, 3.0$  Hz, 1H), 1.83 (m, 4H), 0.80 (dd,  $J = 6.6, 2.2$  Hz, 3H);  $^{13}\text{C}\{^1\text{H}\}$ NMR ( $\text{CDCl}_3$ , 75 MHz)  $\delta$  141.68, 128.03, 126.77, 125.82, 72.62 (d,  $J_{\text{N-C}} = 1.54$  Hz), 65.40 (d,  $J_{\text{N-C}} = 3.40$  Hz), 51.86 (d,  $J_{\text{N-C}} = 3.92$  Hz), 23.52 (d,  $J_{\text{N-C}} = 3.0$  Hz), 11.95.

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