ml. of 96% ethanol gave a solution whose qualitative and quantitative composition could easily be determined on a Beckman Spectrophotometer.

The adsorbent can be recovered by placing in a chromatographic tube, washing with enough 96% ethanol to wet the entire column, then washing with three times this volume of petroleum ether, and finally drying in the air at room temperature. Silica-zinc sulfide mixture so recovered showed slightly weaker adsorptive properties than fresh adsorbent, but was its equivalent for all practical purposes. Both fresh and recovered mixtures were used in this work.

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Osmotic and Activity Coefficients of Lithium Bromide and Calcium Bromide Solutions

BY R. A. ROBINSON AND H. J. MCCOACH

The osmotic and activity coefficients of lithium chloride and calcium chloride solutions have been determined recently[1,2] up to the highest concentrations. Similar measurements on the bromides have now been made to extend the concentration range beyond that of earlier measurements.[3,4]

Isopiestic determinations were made using platinum dishes as it has been found that some corrosion of silver dishes occurs with concentrated bromide solutions. Calcium chloride and sulfuric acid were used as reference electrolytes. The molalities of pairs of solutions of equal vapor pressure are given in Table I. From these measurements the osmotic and activity coefficients given in Table II were evaluated. This table contains values at low concentrations, the earlier data having been recalculated to conform with more recent reference data.[5]

TABLE I

MOLALITIES OF ISOPIESTIC SOLUTIONS AT 25°

LiBr	$CaCl_2$	LiBr	$CaCl_2$	LiBr	$CaCl_2$	LiBr	$CaCl_2$
4.837	3.110	5.937	3.756	6.913	4.345	7.942	4.984
9.388	5.980	10.12	6.553	11.02	7.426	11.87	8.342

LiBr	H_2SO_4	LiBr	H_2SO_4	LiBr	H_2SO_4	LiBr	H_2SO_4
11.95	12.85	13.61	15.29	14.33	16.32	15.46	17.88
16.14	18.80	16.47	19.20	16.58	19.35	17.09	20.04
18.39	21.64	18.99	22.35	19.85	23.21		

$CaBr_2$	$CaCl_2$	$CaBr_2$	$CaCl_2$	$CaBr_2$	$CaCl_2$	$CaBr_2$	$CaCl_2$
1.422	1.524	1.766	1.897	2.140	2.309	2.152	2.321
2.554	2.764	2.584	2.801	2.791	3.026	3.116	3.387
3.565	3.888	3.785	4.158	3.922	4.312	4.435	4.965
5.144	5.952	5.595	6.655	5.726	6.893	5.984	7.470
6.170	7.831	6.286	8.067	6.406	8.375	6.583	8.730
6.630	8.838	6.863	9.498	6.965	9.815	7.216	10.41

$CaBr_2$	H_2SO_4	$CaBr_2$	H_2SO_4	$CaBr_2$	H_2SO_4	$CaBr_2$	H_2SO_4
7.636	16.10	7.922	16.81	8.406	17.97	9.210	19.61

TABLE II

OSMOTIC AND ACTIVITY COEFFICIENTS OF LITHIUM AND CALCIUM BROMIDE AT 25°

	LiBr		$CaBr_2$	
m	φ	γ	φ	γ
0.1	0.943	0.796	0.863	0.532
.2	.944	.766	.878	.492
.3	.952	.756	.900	.482
.4	.960	.752	.927	.483
.5	.970	.753	.958	.491
.6	.981	.758	.990	.505
.7	.993	.767	1.022	.522
.8	1.007	.777	1.057	.543
.9	1.021	.789	1.093	.568
1.0	1.035	.803	1.131	.597
1.2	1.067	.837	1.207	.665
1.4	1.098	.874	1.286	.747
1.6	1.130	.917	1.370	.848
1.8	1.163	.964	1.455	.970
2.0	1.196	1.015	1.547	1.121
2.5	1.278	1.161	1.790	1.657
3.0	1.364	1.341	2.048	2.54
3.5	1.467	1.584	2.297	3.89
4.0	1.578	1.897	2.584	6.28
4.5	1.687	2.28	2.908	10.66
5.0	1.793	2.74	3.239	18.47
6.0	1.989	3.92	3.880	55.8
7.0	2.206	5.76	4.463	163.0
8.0	2.432	8.61	4.809	375
9.0	2.656	12.92	4.969	696
10.0	2.902	19.92	...	.....
11.0	3.150	31.0	...	.....
12.0	3.356	46.3	...	.....
13.0	3.581	70.6	...	.....
14.0	3.776	104.7	...	.....
15.0	3.912	146.0	...	.....
16.0	4.025	198.0	...	.....
17.0	4.110	260	...	.....
18.0	4.173	331	...	.....
19.0	4.216	411	...	.....
20.0	4.217	485	...	.....

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A Claisen Condensation by a Primary Grignard Reagent

BY S. B. SOLOWAY AND F. B. LAFORGE

The abnormal reactions of the Grignard reagents have been frequently reported in the literature. In the majority of such reactions the Grignard reagent has been prepared from either a secondary or a tertiary halide. Recently the Claisen condensation of esters by the agency of *t*-butylmagnesium chloride has been reported.[1] In this note we describe a mixed ketone–ester condensation by means of a Grignard reagent prepared from a primary halide.

The reaction between ethyl levulinate and the Grignard reagent is known to give low yields of

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[1] Zook, McAleer and Horwin, *ibid.*, **68**, 2404 (1946).