28. Preparation of a New Anion Exchange Resin

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As well known, dimethylaniline condenses with formaldehyde easily into N-N'-Tetramethyldiaminodiphenylmethane. From this fact man can directly suppose that N, N'-diphenylpiperazine (DP) would condense with formaldehyde and produce a new kind of synthetic resin and this resin would have the character as an anion exchanger. This suggestion was proved to be fact by actual experiment. The results obtained are summerised in the following table :

exp. No.	DP:CH_2O (35%) (mole ratio)	catalyser	solvent	boiling hrs.	capacity of the obtained resin		Degree of swelling
					milliequiv. HCl/g resin	milliequiv. HCl/cc resin	
1	1 : 4	Sulfanilic acid	Methanol 20cc	3	— (no resinous product)	—	—
2	1 : 4	conc HCl 1cc	Methanol 20cc	9	— (tar-like resin)	—	—
3	1 : 10	conc HCl 10cc	Methanol 20cc	3	3.02	0 43	1.47
4	1 : 10	N H_2SO_4 1cc	Methanol 40cc	3	2.38	0.63	1.30
5	1 : 10	conc H_2SO_4 2cc	Water 8cc	1.5	2.81	0.39	1.48
6	1 : 10	〃	〃	at 50°6hrs boiling 3hrs	2.81	0.88	1.23
7	1 : 10	—	Acetic acid 40cc	3	2.38	0.50	1.04
8	1 : 10	NH_4Cl 2g	—	15	3.89	0.75	2.50
9	1 : 10	〃	—	20	4.57	1.03	2.07
10	1 : 10	〃 1g	—	10	3.89	0.88	2.60

In each case 2g DP were used.
The calculated capacity is ca. 8 milliequiv. HCl/g resin.

29. Syntheses of Non-ionic Surface Active Agents. (II)

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The authors prepared some non-ionic surface active agents of ethanolamides derivatives.

A) Lauric-acid-ethanolamides and their polyethyleneoxide condensation-products

Lauricacid-monoethanolamide (L. M.) or diethanolamide (L. D.), prepared from lauric acid (b. p./25mmHg 195-215°C.) and monoethanolamines or diethanolamines, are condensed with ethyleneoxide (EO) at various proportions using metallic Na as catalyst at 130-140°C.

The results are as follows.

	Material	Na	Absorbed EO mols /OH 1mol
L.M. 5.2	L.M. 10g	0.3g	5.2
L.M. 7.7	L.M. 10g	0.3g	7.7
L.D. 2.0	L.D. 5g	0.1g	2.0
L.D. 5.5	L.D. 10g	0.3g	5.5

Ethyleneoxide vapor inlet speed ca. 6 g/hr.

The surface tensions of their aqueous solutions are ca. 30-35 dynes/cm at 5-0.1 % concentrations.

B) Transesterification coconut-oil with triethanolamine

The authors transesterified coconut-oil with triethanolamine using anhyd. Na_2CO_3 as catalyst.

The results are asfollows.

Reaction Temp. 200°C, Reaction Time 3 hrs. anhyd. Na_2CO_3 0.15 g

	Coconut Oil	Triethanolamine	Hydroxyl value of reaction-products
CT (1)	21g	6g	155
CT (2)	21g	12g	233
CT (3)	19.5g	14g	219

The surface tensions of their aq. dispersions are ca. 32-36 dynes/cm at 5-0.1% concentrations.

30. The Plastic Aftertreatment on the High Tenacity Rayons. (IV)

Narao Saito

(Horio Laboratory)

The present stage of the author's research was briefly reviewed in contrast to a general status of this kind of aftertreatment hithertofore prevalent here in Japan, now that the author's research proved to have made a pronounced step forward.