

—ノート—

## 中和指示薬としての2,6-ジメトキシフェノールオーリン

## Aurin Compound as an Indicator of Neutralization

多数のポリメチルオーリンを合成して、それぞれにつき中和指示薬としての適用性をしらべた結果、2,6-ジメトキシフェノールオーリンが最適であることを認めた。

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## Outline

Various kinds of aurin compound were examined for the purpose of using them as an indicator of neutralization. As the result 2,6-dimethoxyphenol aurin was found to be useful.

## 1. Introduction

One of the authors prepared many new aurin compounds and published a few reports before<sup>1)</sup>. Almost all of them change to red in an alkaline solution. To know which one is best as an indicator, their absorption spectra were taken using a special filter in each test of the compounds. At the same time pH was measured against the volume of sodium hydroxide added.

## 2. Experiment

## 2.1 Instrument

Hitachi FPW photoelectronic photometer

Hitachi H5 ph meter

## 2.2 Reagent and Sample

sodium hydroxide, hydrochloric acid, methylalcohol, phenolphthalene, aurin, o-methoxyphenol aurin, 2,6-dimethoxyphenol aurin, 2-methyl-6-tert-butylphenol aurin, 2,6-diisopropylphenol aurin, isothymol aurin, o-tert-butylphenol aurin, o-cresol aurin, 2,3,5-trimethylphenol aurin, o-isopropylphenol aurin, 3,5-dimethylphenol aurin, o-phenylphenol aurin.

## 2.3 Experimental process

- (1) An indicator was prepared dissolving the aurin pigment in a small quantity of methylalcohol.
- (2) Wait for fifteen minutes until the instrument is stabilized after switching in.
- (3) Check the adjustment at T=0 and 100 by making the shutter switch open and putting a water cell in the pathway of light.
- (4) Select the best filter in the range of 420~750mm for the indicator in question.
- (5) 25 ml of 0.1 HCl was taken in a small conical flask and a few drops of the indicator solution added, then titrated with 0.1 NaOH. The transparency was measured with a small interval through this titration period to catch the exact end-point.
- (6) For the check of the endpoint, plot pH against the volume of NaOH added.

## 3. Conclusion

In the titration of 25 ml of 0.1 n HCl two drops of 10% methylalcohol solution of 2,6-dimethoxyphenol aurin were effective to make the solution turn blue near the endpoint with an excess of 0.05 ml of the latter (equals to one drop from the biuret). This sensitivity is almost the same with phenolphthalene. Two titration curves were shown in Fig. 1 and 2 for comparison, 2,6-dimethoxyphenol

aurin is an acidic solution colorless near the neutralization point, then changes to blue in an alkaline solution. Thus it proved to be superior as an indicator to any other homologues prepared in our laboratory.

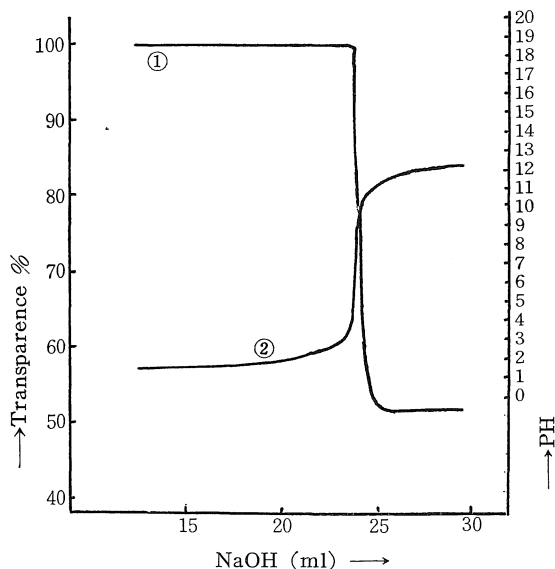


Fig. 1 Titration curve of Hydrochloric acid  
Indicator : Phenolphthaleine  
① Absorption by Filter (550mm)  
② PH

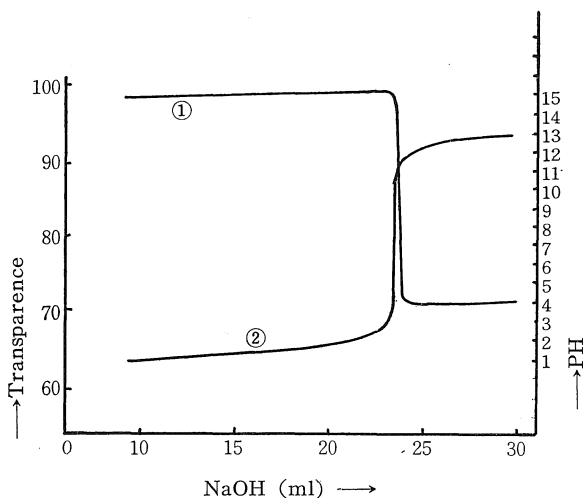


Fig. 2 Titration curve of Hydrochloric acid  
Indicator : 2,6-Dimethoxy Phenol aurin  
① Absorption by Filter (610mm)  
② PH

#### 4. Consideration

The depth of color depends on the indicator concentration. In this experiment the concentration of phenolphthaleine and 2,6-dimethoxyphenol aurin were almost the same with each other. Considering the sharp decreasing curves in Fig. 1 and 2 we can understand the latter is not so much inferior to the former in practical use. The size of molecule has also a deep relation to its solubility. From this point of view it's very natural we couldn't find any good other indicator in many polymethyl aurins.

#### References

- 1) K. Kihara and H. Fujimoto : Report of Aichi Institute of Technology No 6, 97 (1971)  
S. Terao and K. Kihara : *ibid.*, No 7, 111 (1972)