

This article was downloaded by:

On: 25 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Separation Science and Technology

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713708471>

### Relative Exchange Capacities of Stannic Phosphate Papers

Mohsin Qureshi<sup>a</sup>; Saidul Zafar Qureshi<sup>a</sup>

<sup>a</sup> CHEMICAL LABORATORIES, ALIGARH MUSLIM UNIVERSITY, ALIGARH, U.P., INDIA

**To cite this Article** Qureshi, Mohsin and Qureshi, Saidul Zafar(1972) 'Relative Exchange Capacities of Stannic Phosphate Papers', *Separation Science and Technology*, 7: 2, 187 — 191

**To link to this Article:** DOI: 10.1080/00372367208058980

**URL:** <http://dx.doi.org/10.1080/00372367208058980>

## PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## NOTE

### Relative Exchange Capacities of Stannic Phosphate Papers

MOHSIN QURESHI and SAIDUL ZAFAR QURESHI

CHEMICAL LABORATORIES  
ALIGARH MUSLIM UNIVERSITY  
ALIGARH, U.P., INDIA

#### Summary

Relative exchange capacities of stannic phosphate papers have been studied at varying percentages of stannic chloride (*As*). A straight line is obtained when  $[(1/R_F) - 1]$  is plotted against *As*. Chromatograms developed at different temperatures show a slight increase in *R<sub>F</sub>* values on increasing the temperature.

The effect of the degree of impregnation on *R<sub>F</sub>* values has been investigated by Grassini et al. (1) using (2)

$$\alpha = \left( \frac{1}{R_F} - 1 \right) \frac{A_L}{A_s} \quad (1)$$

According to them, if the distribution coefficient ( $\alpha$ ) and  $A_L$  do not change appreciably, a plot of  $[(1/R_F) - 1]$  vs.  $A_s$  [the amount of zirconium phosphate (zp) which is expressed in per cent zirconyl chloride in solution used to impregnate the papers] should give a straight line. The present communication describes studies on stannic phosphate (sp) paper and confirms their conclusion. Here we have chosen sp

TABLE I  
 $R_F$  Values of Ni(II) and Ti(II) on Various sp Papers Developed at Different Temperatures

Temp (°C)	$R_F$ values of Ni(II) in 2 N $H_2SO_4$						$R_F$ values of Ti(II) in 2 N $H_2SO_4$						
	Papers dipped in % stannic chloride			Temp (°C)	Papers dipped in % stannic chloride	Papers dipped in % stannic chloride			Temp (°C)	Papers dipped in % stannic chloride	Papers dipped in % stannic chloride		
	10	15	20			10	15	20			30	40	
5	0.98	0.96	0.92	0.91	0.86	5	0.68	0.61	0.41	0.16	0.14		
20	0.97	0.96	0.93	0.92	0.90	20	0.77	0.67	0.63	0.38	0.23		
30	0.98	0.95	0.94	0.93	0.88	30	0.77	0.68	0.65	0.51	0.21		
54	0.97	0.94	0.95	0.92	0.90	54	0.78	0.68	0.62	0.36	0.35		

papers because they have been found to be useful for important analytical separations of a number of metal ions (3-5).

## EXPERIMENTAL

### Preparation of Papers Having Varying Amounts of sp

Strips ( $15 \times 3$  cm) of Whatman No. 1 were dipped uniformly through a hot aqueous solution of stannic chloride pentahydrate at different concentrations (10, 15, 20, 30, and 40%) and the same procedure was followed as recommended earlier (3).

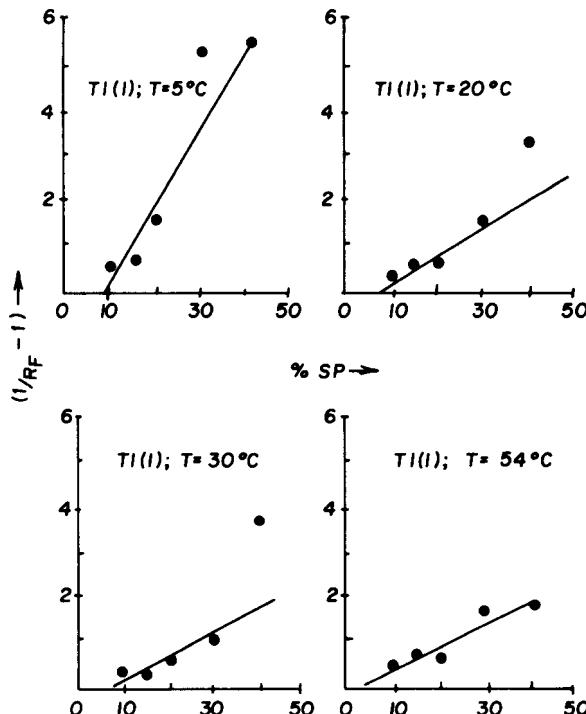


FIG. 1. Plot of  $[(1/R_F) - 1]$  for Tl(I) ion vs. amount of stannic phosphate (sp) held on paper at different temperatures. Developer: 2 N  $H_2SO_4$ . Sp content expressed in % $SnCl_4$  in solution.

### Temperature Control

The chromatograms were developed at temperatures up to 30°C in well-controlled incubators. Above this temperature a thermostatic oven was used.

### Test Solutions and Detection

A 0.1-*M* solution of Ni(II) and Tl(I) nitrates were prepared in 0.1 *N* HNO<sub>3</sub>. Nickel was detected with dimethylglyoxime and Tl(I) with yellow ammonium sulfide.

## RESULTS

The chromatograms were developed by the ascending method in 2 *N* H<sub>2</sub>SO<sub>4</sub>. The results are summarized in Table 1.

## DISCUSSION

In almost all cases a straight line was obtained when  $[(1/R_F) - 1]$  was plotted against the degree of impregnation (Figs. 1 and 2). The

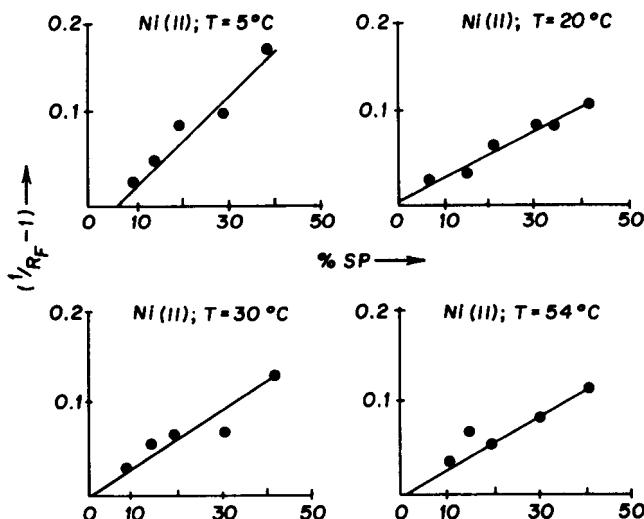


FIG. 2. Plot of  $[(1/R_F) - 1]$  for Ni(II) ion vs. amount of stannic phosphate (sp) held on paper at different temperatures. Developer: 2 *N* H<sub>2</sub>SO<sub>4</sub>. Sp content expressed in % SnCl<sub>4</sub> in solution.

effect of temperature from 5 to 54°C on  $R_F$  values does not vary considerable, and either identical or slightly higher  $R_F$  values are obtained in all cases at the higher temperature. Therefore, there is no definite advantage in working at a particular temperature.

#### Acknowledgment

The authors are grateful to Dr. S. M. Fazlur Rahman for research facilities.

#### REFERENCES

1. G. Grassini and C. Padiglione, *J. Chromatogr.*, **4**, 86 (1960).
2. M. Lederer and S. Kertes, *Anal. Chim. Acta*, **15**, 226 (1956).
3. M. Qureshi and S. Z. Qureshi, *J. Chromatogr.*, **22**, 198 (1966).
4. M. Qureshi, I. Akhtar, and K. N. Mathur, *Anal. Chem.*, **39**(14), 176 (1967).
5. M. Qureshi and A. H. Israili, *Anal. Chim. Acta*, **41**, 523 (1968).

*Received by editor June 21, 1971*