

system used previously, the pH being changed from 7.5 to 5.0, but resulted in increased mobility, and so wider distribution, of all the components, particularly the diphosphates, while retaining the excellent group separation, except for pUp and Gp, which overlapped. Isobutyric acid adjusted to pH 3.7 with 0.5 M NH₄OH (ref. 3) was used in the second direction. This solvent separated C and U, Cp and Up, and pCp and pUp, respectively, with sufficient distance between them for clear distinction. pUp and Gp were also well separated. U and G, Up and Gp, and pUp and pGp, which almost co-chromatograph in this solvent, represent the extremes within each group of compounds in the first run.

Ultraviolet-absorbing spots were detected under an U.V. light, eluted, and determined spectrophotometrically. Commercial nucleosides and their 3'(2')-phosphates were used as standards. Diphosphates, which were not available, were identified from phosphorus/ribose/base ratio analyses as well as spectrophotometric data.

The solvent system suggested has proved useful in base-specificity work on ribonucleolytic enzymes in this laboratory.

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The adsorption of metal ions from HF-HClO₄ mixtures on some ion exchange papers

Anion exchange from HF-HCl mixtures has found extensive analytical applications notably for those ions which complex strongly with HF such as Zr, Nb and Ta¹.

Only very few data on ion exchange from HF-HClO₄ can be found in the literature² and so far only the adsorption of Ta had been studied.

The present investigation is a comparison of HF-HCl and HF-HClO₄ for those ions which were shown by NELSON *et al.*¹ to adsorb from HF-HCl solutions. Both anion exchange papers (anionic resin paper SB-2 and Macherey, Nagel & Co. quaternary ammonium cellulose paper) and a cation exchange paper (sulphonic resin paper SA-2) were examined. The concentration of HCl or HClO₄ was maintained constant at 1N and the HF concentration was varied from 1% to 10%.

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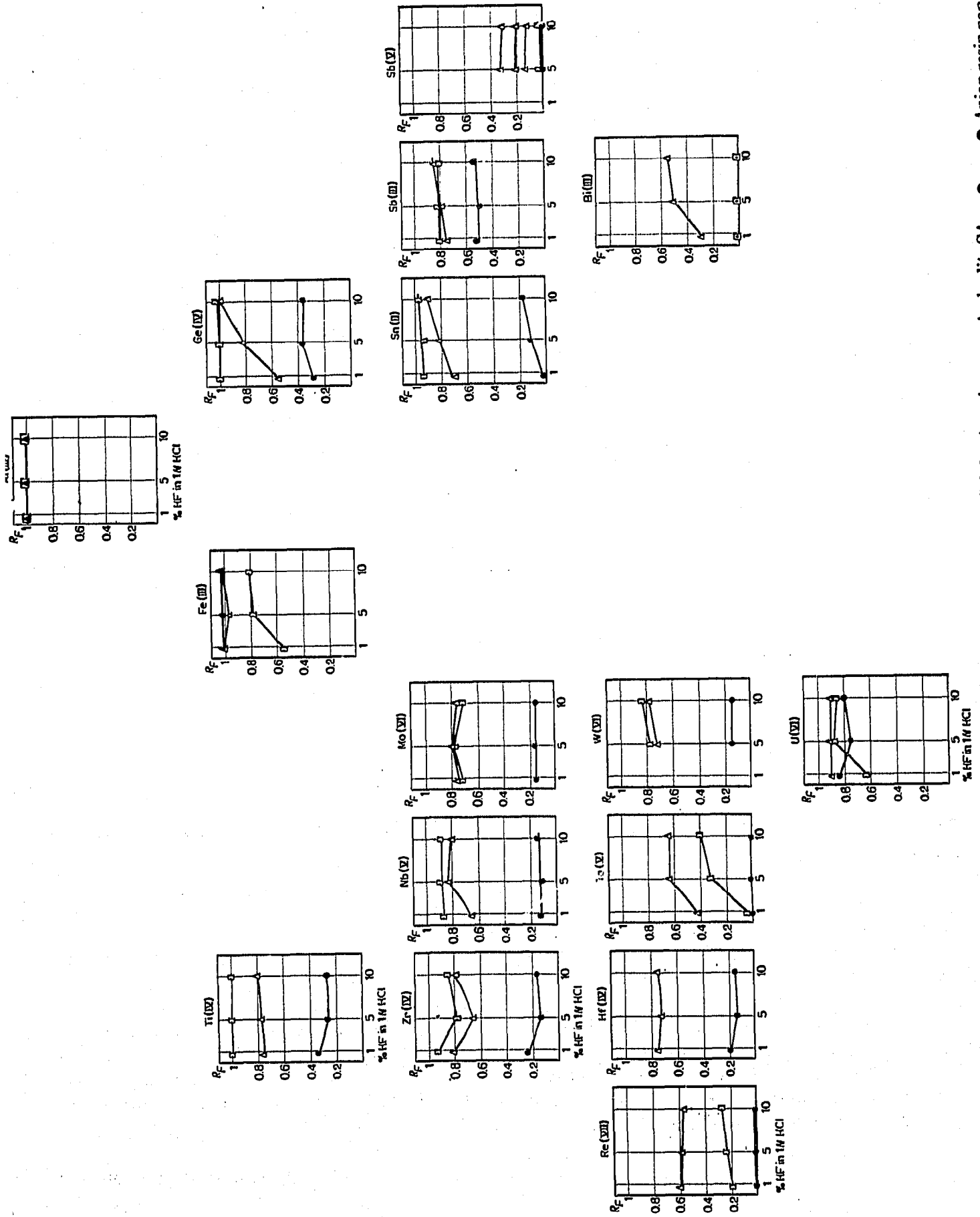


Fig. 1. R_F values of metal ions plotted against the concentration of HF in 1N HCl. \square — \square Sulphonic resin paper, Amberlite SA-2; \bullet — \bullet Anion resin paper. Amberlite SB-2; Δ — Δ Macherery, Nagel & Co. quaternary ammonium cellulose paper.

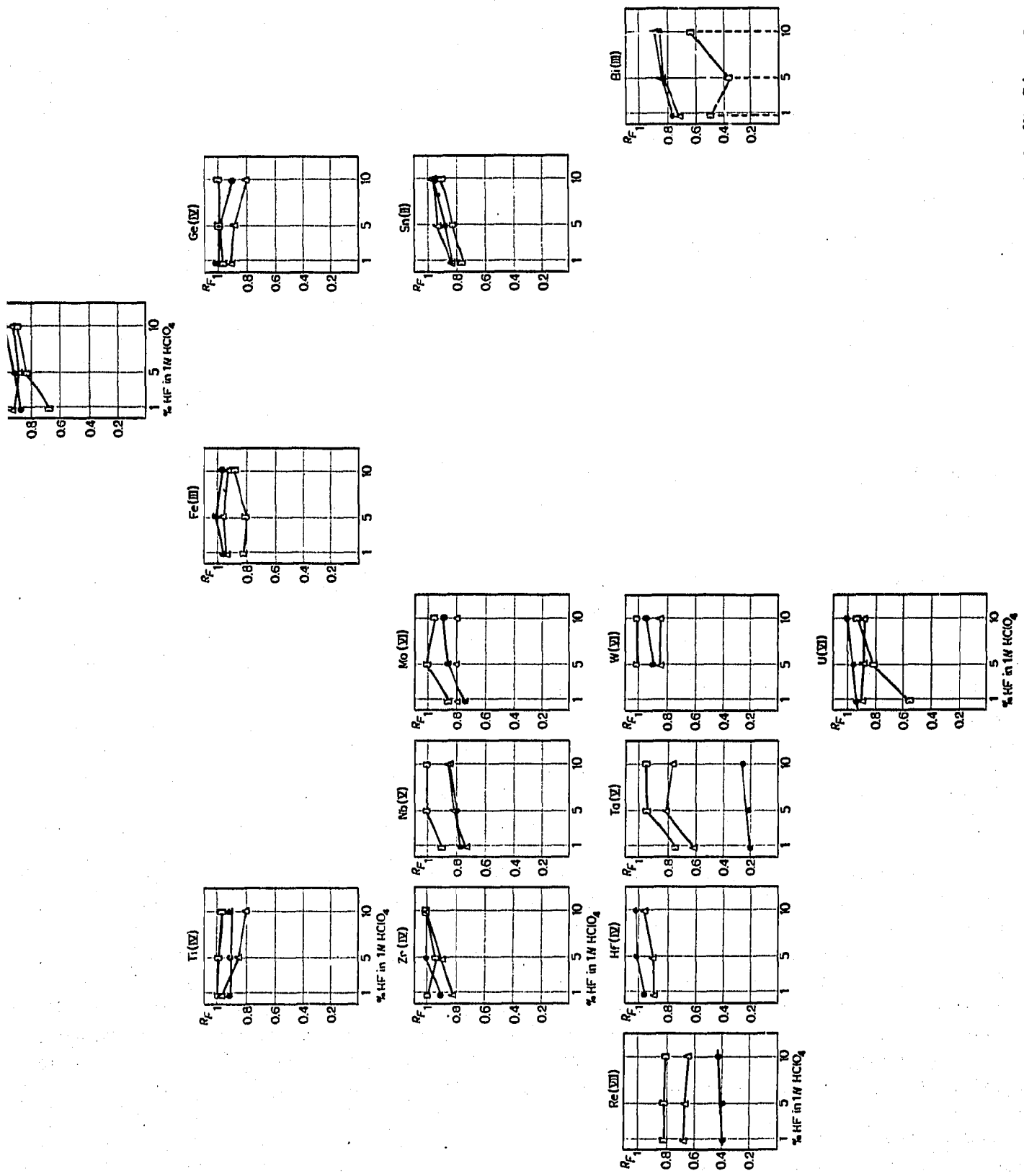


Fig. 2. R_f values of metal ions plotted against the concentration of HF in 1N $HClO_4$. \square — \square Sulphonic resin paper, Amberlite SA-2; \bullet — \bullet Anionic resin paper, Amberlite SB-2; Δ — Δ Macheray, Nagel & Co. quaternary ammonium cellulose paper.

Figs. 1 and 2 show the R_F versus HF concentration curves of various metal ions. While there are considerable differences in adsorption from HF-HCl, very few ions are adsorbed from HF-HClO₄. Ta may be specifically adsorbed from mixtures with Hf, Zr, Ti, Nb, Mo, W, U on an anion exchange resin paper from HF-HClO₄; perchlorate is also adsorbed but even there the R_F differences are sufficient for a separation.

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Book Reviews

Les Séparations par les Résines Échangeuses d'Ions, by B. TRÉMILLON, Gauthier-Villars, Paris, 1965, viii + 400 pp., price F 90.00.

Although the literature on ion exchange is still very limited, especially in the French language, this new addition to it cannot be recommended without reservations.

Let us start by describing its useful features. It is the first book which has attempted to present a selection of ion exchange data in the form of graphs (usually K_d values against molarity of acid) and a selected bibliography on ion exchange data of inorganic ions in various media. The reviewer has already found this part of the book very useful in his own work.

The general chapters left the reviewer somewhat perplexed. The term DONNAN equilibria is not used with the meaning usually attached to it in physical chemistry. The electrostatic attraction between ions in solution and the charged groups of the exchanger is termed "ion exchange" and this definition will also find opponents. Ion exchange in organic solvents could have been explained better. Displacement development, although of importance in isotope separations, does not deserve the space devoted to it. The chapter on electromigration in ion exchangers is incomplete.

Printing and illustrations are much better than the usual French scientific publications and it requires only little practice to find ones way through it.

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