Asian Journal of Chemistry Vol. 10, No. 4 (1998), 1011–1012

NOTE

Spectral Investigation of Complex Ion Formation in Cu-Co-Ni-Halide with Alkali Halides

ASHVIN N. MODI*, DINESH PATEL and C.M. DESAI
Junior Laboratory Technician
G.N.F.C. Ltd., Bharuch-392 015, India

Spectral absorbance of nickel chloride, cobalt chloride or cupric chloride with alkali chloride systems was studied by dye indicators (i.e., crystal violet (C.V.), and methylene blue (M.B.)) showing corresponding complex ion formation in ratio of 1:2, 1:1 and 2:1.

Farasram *et al.*[1] studied the complex ion formation in lead-alkali nitrate and mercuric-alkali nitrate systems using dye indicator method Modi and Desai have studied the complex ion formation between zinc chloride and alkali chloride[2].

In the present work the absorbance of pure dye solution taken as the standard was measured while increasing the $NiCl_2$, $CuCl_2$ or $CoCl_2$ concentration as variant and keeping the concentration of alkali chloride constant. Monovariation method used and dye concentration constant as per usual procedure[1,2]. A Shimadzu double beam spectrophotometer UV-160A was used for spectral measurements. Salts used were AR grade and dye was purified being crystal violet (C.V.) and methylene blue (M.B.).

Complex ions formation between cobalt, copper or nickel chloride was investigated by spectral method indicating three complexes in the proportions 1:2, 1:1, 2:1 between three salts[2]. Earlier, Kazi and Desai investigated complex ion formation by using interfacial tension method between two salts[2]: Ni, Cu, Co chlorides; shows these metal halides have the same degree of complexing tendency 1:2, 1:1, and 2:1, while mercuric chloride has higher than Cu, Co, Ni which have higher tendency than $CdCl_2$. This work confirms the earlier observation of Desai showing same complexing tendency among copper, cobalt and nickel towards alkali halides KCl or NaCl or LiCl.

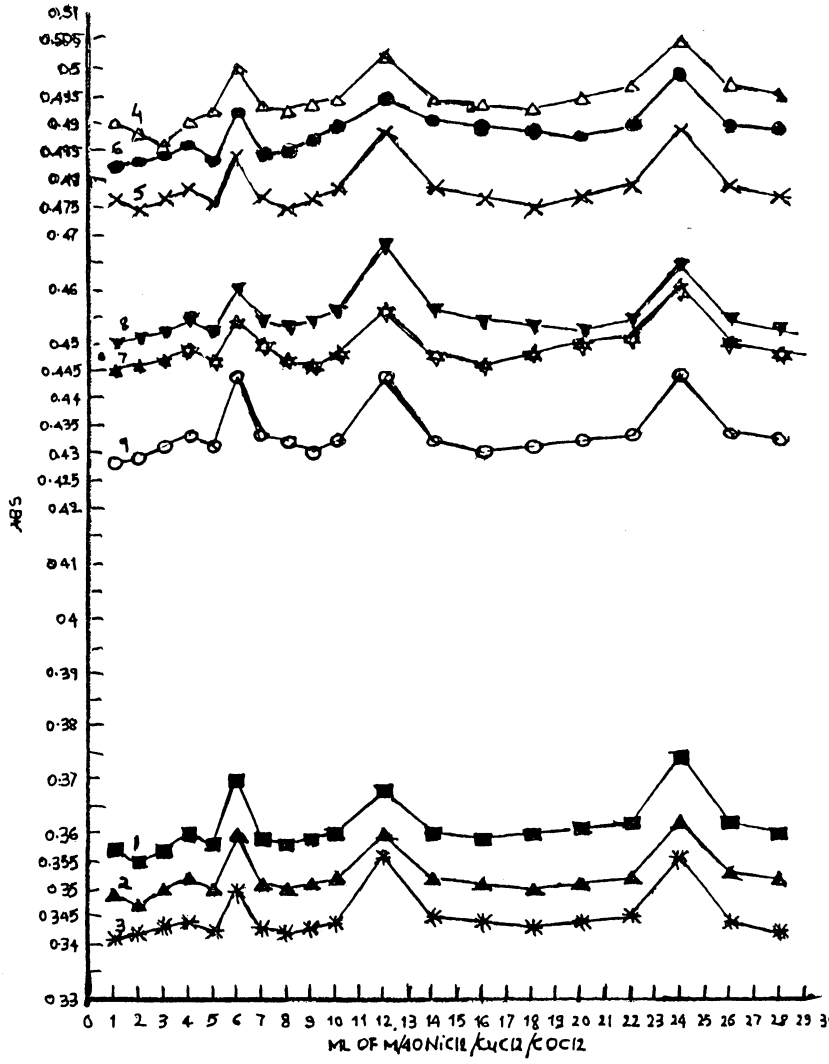
The authors are thankful to authority of G.N.F.C. Ltd., Bharuch for providing research facilities.

REFERENCES

1. P.L. Farasram, R. Farasram and C.M. Desai, *Asian J. Chem.*, **9**, 758 (1997).
2. Ashvin N. Modi and C.M. Desai, *Asian J. Chem.*, **10**, 192 (1998).

(*Received:* 1 March 1998; *Accepted:* 15 June 1998) AJC-1536

†Artemis Research Centre, Themis Chemicals Ltd., Vapi-396 195, India.



Graph-I

1. mL of M/40 $CoCl_2$ + 12mL KCl + 10 mL M.B. ■
2. mL of M/40 $CoCl_2$ + 12mL KCl + 10 mL M.B. ▲
3. mL of M/40 $CoCl_2$ + 12mL KCl + 10 mL M.B. *
4. mL of M/40 $NiCl_2$ + 12mL KCl + 10 mL M.B. Δ
5. mL of M/40 $NiCl_2$ + 12mL KCl + 10 mL M.B. ×
6. mL of M/40 $NiCl_2$ + 12mL KCl + 10 mL M.B. ●
7. mL of M/40 $CuCl_2$ + 12mL KCl + 10 mL M.B. ✡
8. mL of M/40 $CuCl_2$ + 12mL KCl + 10 mL M.B. ▼
9. mL of M/40 $CuCl_2$ + 12mL KCl + 10 mL M.B. ○