This Week's Citation Classic

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Starý J. Systematic study of the solvent extraction of metal oxinates.
Anal. Chim. Ada **28**:132-49, 1963.
[Dept. Nuclear Chemistry, Faculty of Technical and Nuclear Phys.
Prague Univ., Czechoslovakia]

This paper describes the extraction of 32 metals with oxine solution at different pH-values, oxine concentrations, and in the absence and in the presence of water soluble complexing agents. From the results obtained, the extraction constants of metal oxinates and stability constants of metal complexes with various complexing agents have been calculated. [The *SCI*® indicates that this paper has been cited over 175 times since 1963.]

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"This work was done nearly 20 years ago when I returned from a postdoctoral fellowship at Moscow University. I had started my new job in the newly founded department of nuclear chemistry at Prague University. The facilities were very modest in this department and for that reason I had to select a problem which could be solved using such simple apparatus as a pH-meter, spectrophotometer, and Geiger-Müller counter. I decided to do a systematic study of oxine which was at that time one of the most often used organic reagents in analytical chemistry. However, there existed only a limited number of quantitative data concerning the solvent extraction of metal chelates. In addition, the extraction method had been found shortly before that time to be much more simple and rapid for the determination of the composition and stability constants of water soluble complexes even at very low metal concentrations in comparison with other methods.[1] Oxine systems were especially suitable for this type of investigation.

"The work was completed in one year and the manuscript contained 23 figures and more than 200 equilibrium constants. This was the first paper that I had sent to an international journal and the referee's comment was rather vague: 'The paper contains so many quantitative data that it is not possible that they are valid.' However, after some exchange of letters with the editor, the paper was accepted for publication.

"Why has this article been cited relatively often? I can think of the following reasons: 1) this was the first systematic study of oxine which remains up to now one of the most often used organic reagents in analytical chemistry, 2) the equilibrium constants determined in this paper allow calculation of the optimum conditions for the separation and/or determination of a large number of metals, and 3) the paper shows a great versatility of the solvent extraction method in the investigation of metalcomplexation in aqueous solution.

"During the last years a number of equilibrium constants of metal oxinates substantially increased and for this reason the IUPAC Commission on Equilibrium Data asked us to compile, discuss, and critically evaluate published data on the dissociation, solubility, and liquidliquid distribution of oxine and its metal chelates in order to recommend the most reliable data."[2]

1. **Starý J.** Bestimmung der Zusammensetzung und der Stabilitats-konstanten von Metallkomplexen durch Extraktionsmethode. *Collec. Czech. Chem. Commun.* **25**:2630-41, l960.
2. **Starý J, Zolotov Yu A & Petrukhin O M.** *Critical evaluation of equilibrium constants involving 8-hydroxyquinoline and its metal chelates.* Oxford: Pergamon Press, 1979. 37 p.