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Stability Constants of Palladium, Copper and Nickel Chelates of N-Phenyl-N-(2-Thiazolylazo) Hydroxylamine

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Stabilitätskonstanten von Pd-, Cu- und Ni-Chelaten mit N-Phenyl-N-(2-thiazolylazo)-hydroxylamin

Komplex von Palladium, Kupfer, Nickel mit N-Phenyl-N-(2-thiazolylazo)-hydroxylamin; Stabilitätskonstanten

N-phenyl-N-(2-thiazolylazo) hydroxylamine, prepared for the first time by us in these laboratories, has the following hydrogen-bonded trans-structure:

Stability constants of palladium, copper and nickel chelates of this compound have been determined in 70% v/v dioxane-water mixture by employing the Bjerrum-Calvin pH titration technique. The titration medium was maintained at a constant ionic strength

Table 1. Stability constants of metal chelates of N-phenyl-N-(2-thiazolylazo) hydroxylamine

Metal ion	$\log k_1$ ($\bar{n} = 0.50$)	$\log k_2$ ($\bar{n} = 1.50$)	$\log K_{av}$ ($\bar{n} = 1.00$)	$\log k_1 k_2$	$\log K$
Palladium	11.53	11.06	11.29	22.59 ^a	22.58
Copper	11.23	10.99	11.09	22.22 ^a 22.26 ^b 22.16 ^c	22.18
Nickel	9.93	7.34	8.59	17.27 ^a	17.18

^a Stability constants by interpolation at half $\bar{n}$.^b Stability constants by Albert and Serjeant's method.^c Stability constants by least squares method.

(0.1 M NaClO₄ solution) and at a temperature of $25 \pm 0.5^\circ\text{C}$. Log K values are the following: palladium 22.58, copper 22.18, and nickel 17.18. Stabilities of copper chelates have also been calculated by two more methods (Table 1).

The order of stability of N-phenyl-N-(2-thiazolylazo) hydroxylamine metal chelates has been found as: palladium > copper > nickel.

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