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[\[PDF \(793K\)\]](#) [\[References\]](#)**Metal speciation in natural river waters: measurement by diffusive gradients in thin-films and estimation by chemical equilibrium model**[Takashi NAGAI](#)¹⁾, [Kiyotaka TSUNEMI](#)²⁾ and [Akemi KAWAMOTO](#)²⁾

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Abstract

Metal bioavailability of and toxicity to aquatic organisms depend on their speciation. The chemical speciation of Ni, Cu, and Zn in two Japanese rivers was measured by diffusive gradients in thin-films (DGT) and estimated by a chemical equilibrium model. Using a standard DGT device, we obtained labile metal concentrations. Visual MINTEQ and its default thermodynamic database were used to obtain the fractions of inorganic metal species. The fractions of labile Ni concentration measured by DGT at one site were very low and not well predicted by MINTEQ. The fractions of labile Cu concentration at all sampling sites were low and were consistent with the model estimation. Both DGT measurements and the model estimation resulted that most Zn was present as free ion. Measured and estimated metal speciations near the wastewater treatment plant were in agreement once EDTA was incorporated into the model estimation. Our results suggest that we should take into account the existence of non-humic chelators at the model estimation of water samples containing wastewater organic matter.

Key Words: [Metals](#), [Speciation](#), [DGT](#), [Chemical equilibrium model](#)[\[PDF \(793K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)

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