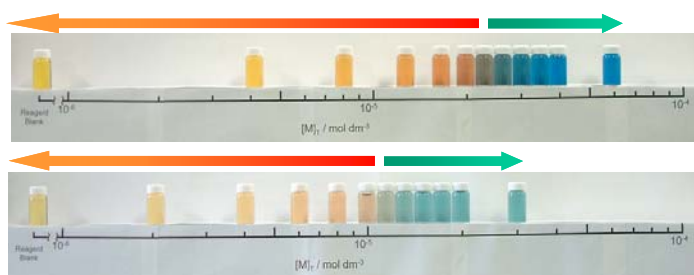


Group name	Group of Environmental and Energy Chemistry
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Group Homepage	
Main Subjects	Development of simple analytical methods

Content

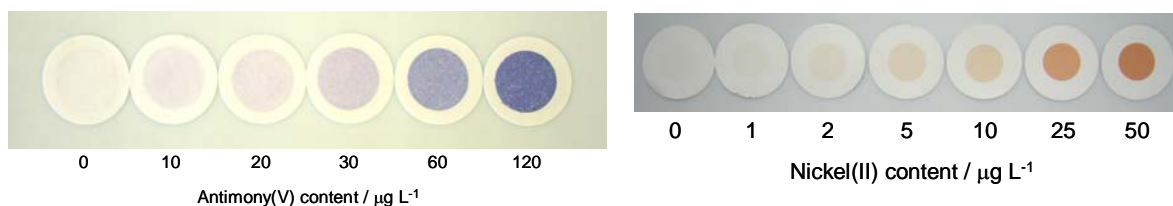
The main purpose of our research is to develop simple analytical methods of trace elements using neither expensive instrumentations nor special laboratory skills. As described below, we have developed various techniques of visual measurements which are using human eyes as “Optical Detector”. Please see the detail at <http://mizu-labo.yz.yamagata-u.ac.jp/>

1. Visual threshold detection of trace metal ions based on homo-binuclear complex formation equilibrium

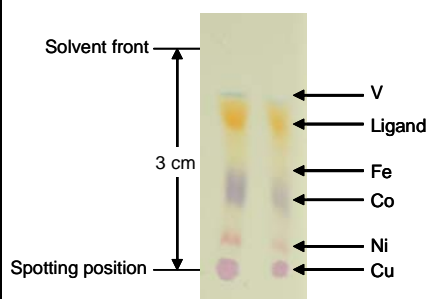


The slight difference in metal ion concentration was expressed by clear difference in color. The boundary of the color region was readily controlled.

2. Selective detection of trace nickel or antimony by solid-phase concentration with membrane filters



3. Selective and simultaneous detection of trace metal ions by thin layer chromatography



Only five chelates with metal ions such as copper(II), nickel(II), iron(III), cobalt(III), and vanadium(V) were detected with different colors on the ODS–silica plate. Although many kind of metal ions such as zinc(II), lead(II), and cadmium(II) reacted to form their chelates in aqueous solution, these chelates were disappeared during the TLC running.