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[Lab. of Pharm. Analytical Chemistry]

Proton-Induced Switching of Metal-Metal Interactions in Dinuclear Ruthenium and Osmium Complexes Bridged by 2,2'-Bis (2-pyridyl) Bibenzimidazole (bpimH₂).

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New dinuclear complexes $[M(L)_2 (bpimH_2) M(L)_2]^{4+}$ ($M=Ru, Os$; $L=bpy, phen$) act as dibasic acids. Both the absorption spectra and oxidation potentials are strongly dependent on the deprotonation of the N-H group on the coordinated ligand. The dependence of the pK_a values on the metal oxidation states suggests that the mixed-valence dinuclear complexes have a localized valence structure. The degree of metal-metal interaction of the deprotonated complexes becomes 4-6 times larger than that of the protonated ones. Thus, proton transfer in the dinuclear complexes can be utilized to serve as a trigger signal for switching the metal-metal interaction.

[J. Chromatogr., **540**, 411-415 (1991)]

[Lab. of Pharm. Analytical Chemistry]

Determination of Glyphosate and Its Major Metabolite Aminomethylphosphonic Acid (AMPA) by High-Performance Liquid Chromatography after Derivatization with *p*-Toluenesulfonyl Chloride.

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A high-performance liquid chromatographic procedure is described for the simultaneous determination of glyphosate and its major metabolite AMPA. Glyphosate and AMPA were derivatized with *p*-toluenesulfonyl chloride under alkaline conditions, and an aliquot of the reaction mixture was injected into a C₁₈-5 column with a mobile phase consisting of 0.2 M phosphate buffer (pH 2.30)-acetonitrile (85: 15, v/v) and detection at 240 nm. The response was linear in the range 100 ng - 4 mg ml⁻¹ for both compounds in the sample solution, and the minimal detectable quantities were 10 ng ml⁻¹ of glyphosate and 8 ng ml⁻¹ of AMPA with a 20- μ l injection, respectively.

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[Lab. of Pharm. Analytical Chemistry]

High-Performance Liquid Chromatographic Determination of Glyphosate and (Aminomethyl) phosphonic Acid in Human Serum after Conversion into *p*-Toluenesulfonyl Derivatives.

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We have developed a simple, highly sensitive and fast assay method for determining glyphosate and its major metabolite, (aminomethyl)phosphonic acid (AMPA), in serum by high-performance liquid chromatography with ultraviolet detection. Both compounds were successfully extracted with an anion-exchange resin column and allowed to react with *p*-toluenesulphonyl chloride. The detection limits were 0.3 μ g ml⁻¹ for glyphosate and 0.2 μ g ml⁻¹ for AMPA. Recoveries of glyphosate and AMPA spiked to serum were *ca.* 75% and *ca.* 88%, respectively.