

# Athinoula L. Petrou

Associate Professor of Inorganic Chemistry

## Education

B.Sc. in Chemistry, National and Kapodistrian University of Athens, Greece, (1972).

Ph.D. in Chemistry, (Inorganic Chemistry), University of Athens, (1978).

B.Sc in Biology, National and Kapodistrian University of Athens, (1980)

Post Doctoral work at the Universities of Leeds (1979), Newcastle (1980) , Newcastle (1987), Newcastle (2007), Newcastle 2008.

## Research Fields of Interest

1. Electron transfer reactions of Inorganic and Bioinorganic processes
2. Synthesis and characterization of coordination complexes
3. Mechanisms of Substitution processes of various transition metal complexes
4. Chemical Education
5. Study of mechanisms of various Geochemical processes

## Teaching

**Undergraduate:** General and Inorganic Chemistry, Inorganic Reaction Mechanisms, Certain Chapters in Inorganic Chemistry

**Graduate:** Inorganic Reaction Mechanisms

## Activities

1. Organisation (Chairperson) of the Royal Society of Chemistry Meeting "33rd Inorganic Reaction Mechanisms Meeting" (Athens, January 2004)
2. Editor-in-Chief of the Greek Chemical Journal *Chimika Chronika*, General Edition (2004-2007)

## Selected Papers

1. "A new series of organochromium complexes formed in aqueous solutions". PETROU A., Vrachnou-Astra E., Katakis D., *Inorg. Chim. Acta* 1980, 39(2), 161-71.
2. "Kinetics and mechanism of aquation of some organochromium complexes". PETROU A., Vrachnou-Astra E., Konstantatos J., Katsaros N., Katakis D., *Inorg. Chem.*, 1981, 20(4) 1091-6.
3. "Kinetics of the equilibration of oxygen with monomeric and octameric hemerythrin from the microorganism *Zostera marina*". PETROU A., Armstrong F., Sykes A.G., Harrington P.C., Wilkins R.G., *Biochim. Biophys. Acta*, 1981, 670(3) 377-84.
4. "Kinetic studies on reactions of iron sulfur proteins. Oxidation of the reduced form of spirulina platensis (2Fe-2S) ferredoxin with inorganic complexes". Adzamli I.K., PETROU A., Sykes A.G., Rao K.K., Hall D.O., *Biochem. J.* 1983, 311 (1) 219-26.

5. "Substitution and redox properties of the trimeric incomplete cuboidal tungsten(IV) aqua ion  $W_3O_4(H_2O)_9^{4+}$ : comparison with the aquatetraoxotrimolybdenum( $4^+$ )". Ooi B.L, PETROU A., Sykes A.G., *Inorg. Chem.* 1988, 27(20) 3626-9.
6. "Coordination complexes of 3,4-dihydroxyphenylpropionic acid (dihydrocaffeic acid) with copper(II), nickel(II), cobalt(II), and iron (III)". PETROU A., Koromantzou M.V., Tsangaris J.M., *Trans. Met. Chem.*, 1991, 16(1) 48-52.
7. "Binuclear vanadium (V) and vanadium(IV,V) complexes of dihydrocaffeic and ferulic acids" PETROU, A., *Trans. Met. Chem.*, 1993, 18(5), 462-6.
8. "Kinetics and mechanisms of the reaction between chromium(II) and 1,2-bis(2-pyridylethylene) in acidic aqueous solutions". PETROU A., *J. Chem. Soc., Dalton Trans.*, 1993, 3771.
9. "Coordination complexes of caffeic and ferulic acids with Cu(II), Ni(II), Co(II) and Fe(III)". PETROU A.L., Koromantzou M.V., Tsangaris J.M., *Chim. Chron.* 1993, 22(4) 189-204.
10. "Coordination complexes of biologically important ligands with various metal ions of biological importance" PETROU A.L., Perlepes S. P., Tsangaris J.M., in *Molecular Properties and Chemistry of biological systems* (eds. N. Hadjiliadis and M. Fasano) 1994, p. 57-61
11. "Preparation and properties of manganese(II) and manganese(III) complexes possessing ligands with carboxylate and phenolic/phenoxide groups", PETROU A.L., Perlepes S.P. *Chim. Chron.* 1994, 23(4) 155-68.
12. "Oligonuclear zinc(II) complexes of dianion of hydrocaffeic, caffeic and ferulic acids", PETROU A.L., Perlepes S.P., *Chim. Chron.* (1995), 24(2) 133-46.
13. "A mechanism of the first stage of the reaction between chromium(II) and some unsaturated ligands. Formation of binuclear organochromium intermediates with carbon-carbon bridges". PETROU A.L., *Chim. Chron.* (1995), 24(1), 69-76.
14. "The formation and partial characterization of the phenyl-acrylic-penta-aquo-chromium(III) isomers:  $(H_2O)_5CrC(COOH)=CHPh$  and  $(H_2O)_5Cr(III)-C(Ph)=CHCOOH$ ". PETROU A.L., *Chim. Chron.*, 1996, 25(1) 29-34.
15. "Complexes of aluminum(III) with biologically important ligands." PETROU A., Kollia M., Scourti A.-I., Chrycikopoulou M., Mavromoustakos T., Theodoropoulou E., Karatza M.-H., Tsangaris J.M., *Cytotoxic, Mutagenic and Carcinogenic Potential of Heavy Metals related to Human environment*, NATO, ASI Series 2. Environment - Vol. 26, p. 253-263 Editor N.D. Hadjiliadis, Kluwer, Academic Publishers, 1997.
16. "Interactions of aluminum(III) with the biologically relevant ligand D-ribose". PETROU A.L., *Coordination Chemistry Reviews* 228 (2002) 153-162.
17. "The use of the Arrhenius equation in the study of deterioration and of cooking of foods – some scientific and pedagogic aspects". PETROU A.L., Roulia M., Tampouris K., *Chemistry Education: Research and Practice in Europe*, 2002, Vol.3, No.1, pp.87-97
18. "Kinetics and mechanisms of the reaction between chromium (III) and 3,4-dihydroxyphenylpropionic acid in acidic aqueous solutions". PETROU A., Paraskevopoulou P., Chrycikopoulou M., *J. Inorg. Biochem.* 98/1 pp. 123-132, 2004
19. Proton transfer to Nickel-Thiolate Complexes. 2. Rate-limiting intramolecular proton transfer in the reactions of  $[Ni(SC_6H_4R-4)(PhP\{CH_2CH_2PPh_2\}_2)]^+$  (R=NO<sub>2</sub>, Cl, H, Me or MeO) V. Autissier, P.M. Zarza, A. PETROU R.A.Henderson, R.W. Harrington, W.C. Clegg, *Inorg. Chem.* 3106-3115, 43 (10) 2004.
20. "An interdisciplinary model for teaching the topic "foods": a contribution to modern chemical education". Mavropoulos A., Roulia M., PETROU A.L., *Chemistry Education : Research and Practice* 2004, Vol. 5 , No.2 pp. 143-155.
21. Kinetic and mechanism of the reaction between chromium(III) and 3,4-dihydroxy-phenyl-propenoic acid (caffeic acid) in weak acidic aqueous solutions" V. Thoma, K. Tampouris, A.L. PETROU, *Bioinorganic Chemistry and Applications* Vol. 2008 Article ID 624583, 7 pages, 2008, doi: 10.1155/2008/624583

22. Reaction of chromium(III with 3,4-Dihydroxybenzoic Acid: kinetics and mechanism in weak acidic aqueous solutions". K. Zavitsanos K., K. Tampouris and A.L. PETROU *Bioinorganic Chemistry and Applications* Volume 2008, Article ID 212461, 8 pages, doi:10.1155/2008/212461

23. The Activation Energy values estimated by the Arrhenius equation as a controlling factor of platinum-group minerals formation". A.L. PETROU and M. Economou-Eliopoulos, *Geochimika et Cosmochimika Acta* , vol. 73, pp. 1625-1636, 2009.

24. On the origin of Platinum-group element-enrichment and extremely large (Os-Ir-Ru)-minerals: evidence from the activation energy values estimated by the Arrhenius equation , M. Economou-Eliopoulos, A.L.PETROU and G. Tsoupas, *Chemical Mineralogy, Smelting and Metallization*, eds. E. McLaughlin and L.A.Breaux, chapter 4, Nova Science publishers, 2009.

25. "Platinum-group mineral formation : evidence of an interchange process from the entropy of activation values" A.L. PETROU and M. Economou-Eliopoulos, *Geochimika et Cosmochimika Acta* , vol. 73, pp. 5635-5645, 2009.