

## Teresa Iwasita—a tribute to an outstanding electrochemist

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Teresa Iwasita studied Biochemistry at Córdoba National University in Córdoba at the Institute of Chemical Sciences and obtained her masters degree in 1965 with highest marks (“National University of Cordoba Prize”). Her PhD on “Kinetics of the Bromine-Tribromide-Bromide Redox Process on Platinum Electrodes in Acetonitrile Solutions” was awarded at the end of 1967 (Supervisor M.C. Giordano). From 1967 to 1978, she worked as a research and teaching assistant in the group of M.C. Giordano.

With a grant from the Consejo Nacional de Investigaciones Científicas e Técnicas (Argentina), she started investigations of the anodic oxidation of 1,3-Dioxolan in 1978 in W. Vielstich’s group at the Institut für Physikalische Chemie of Bonn University. In 1980, she moved to J.W. Schultze’s group at Heinrich–Heine University at Düsseldorf to study the reduction of  $\text{H}_3\text{O}^+$  ions from 293 K down to 170 K in frozen aqueous solutions in cooperation with W.

Schmickler (Bonn). The voltammetric behavior was not different from that in liquid electrolyte solutions—and Teresa was sorry that the temperatures had not been low enough to study quantum effects.

Measurements of very fast redox reactions enabling for the first time a comparison with the Marcus theory for the direct electron transfer from the metal to large solvated ions like  $\text{Ru}(\text{NH}_3)_6^{2+/3+}$  in solution with expected exchange current densities near  $100 \text{ A/cm}^2$  (or rate constants of  $k = 1 \text{ cm/s}$ ) were attempted using a setup with very fast mass transfer. A ring electrode in the turbulent pipe flow through a tube (up to 20 m/s) yielded an exchange current density near  $100 \text{ A/cm}^2$ , and—in accord with Marcus theory—independent of electrode material.

Back in Bonn in 1986, she applied another new method, just developed in Bonn: Differential Electrochemical Mass Spectrometry (DEMS). Volatile products can be monitored, e.g. during a cyclic voltammogram. In addition, adsorbed species were investigated via in situ FTIR spectroscopy SNIFTIRS (just set up by R. Holze) and electrode transfer from the electrochemical cell to ultrahigh vacuum, followed by thermal desorption. The electrocatalysis of methanol and ethanol oxidation was studied. In cooperation with Jose Giner Inc. in Boston, MA, and in connection with the development of medical sensors employing oxidation of urea and glucose were investigated. Starting from 1994, she continued her research in electrocatalysis and fuel cells at the Universität der Bundeswehr, München, on the properties of PtRu catalysts for methanol oxidation followed.

Since January 1999, Teresa Iwasita is a professor at the Instituto de Química de Sao Carlos, University of Sao Paulo, Brazil. The influence of electrode materials on the pathways of methanol oxidation was studied with FTIRS, DEMS, STM and UHV methods.

And what will be the future? We, fellow electrochemists, do not expect her just to enjoy life. Anyway, we wish her a very pleasant time for the years to come ....

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With contributions from W. Vielstich and V. Solis.

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