LETTERS TO THE EDITOR

DISSOLUTION OF METALS BY AC ELECTROLYSIS

Dear Sir:

Reference is made to the subject article by W. D. Box in the August 1966 issue of *Nuclear Applications*. It is of interest to note that the two Russian references published in 1959 and 1963 have an antecedent in the Wohlwill gold-refining process of 1878.

For the electrolysis of high-silver anodes Wohlwill superimposed a low frequency ac on the dc. This counteracted passivity by causing the adherent AgCl to flake off and permitted the use of a higher current density.

Process details are covered in *Electrochemical Engineering* by C. L. Mantell, McGraw Hill, 1960.

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FLUORINE-18 FROM RECOIL DEUTERONS

Dear Sir:

Radiochemical and gamma-ray spectrometry studies have shown the presence of ^{18}F in the heavy-water moderator-coolant of the Georgia Tech Research Reactor (GTRR). At 1-MW power level the saturation concentration is 3×10^{-3} μCi/ml.

Several possible mechanisms are available to explain the production of ^{18}F activity:

(a) $^{16}O(t,n)^{18}F$

(b) $^{17}O(d,n)^{18}F$

(c) $^{18}O(d,2n)^{18}F$.

We have not been able to produce a measurable quantity of ^{18}F by the irradiation of the same heavy water in a well-thermalized region of the GTRR, indicating that mechanism (a) involving tritons from the deuterium (n,γ) tritium or from $^{6}Li(n,\alpha)$ tritium is not the explanation. Furthermore, thermal/fast neutron flux ratio measurements using the $^{58}Ni(n,p)^{58}Co$ reaction (threshold 2.9 MeV) have shown the ratio to be greater than 500 for the position used.

This leaves mechanisms (b) and (c) which are caused by high-energy recoil deuterons from the fast fission neutron moderation process. Deuterons of the required energy could be found near the fuel-plate heavy-water interface.

Work reported by Tagami et al.[1] has demonstrated the formation of ^{18}F in the light-water-moderated Hitachi Training Reactor and ascribed the production to the $^{18}O(p,n)^{18}F$ reaction. The heavy water within the GTRR does contain approximately 0.5% light water. However, a calculation based on the quantity of ^{18}F found by Tagami, correcting for the different reactor power and irradiation time still leaves the ^{18}F production in the GTRR an order of magnitude higher than that reported for the recoil proton mechanism. Differences in neutron spectra in the two reactors would certainly have an effect as would the method of water irradiation. These factors are being evaluated.

Work to reach a more definite conclusion regarding the mechanism of ^{18}F production in the GTRR is continuing. Currently, experiments involving the irradiation of heavy water with 14-MeV neutrons from the $^{3}H(d,n)^{4}He$ reaction indicate the formation of ^{18}F. If confirmed, this will support the recoil deuteron hypothesis.

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1. Takashi Tagami, Masaaki Yamamoto, and Yasuo Osawa, "Formation of ^{13}N and ^{18}F by Recoil Proton Flux in Water Moderated Reactor," NSJ-Tr-39, Japan Atomic Energy Research Institute (1965).

Corrigendum

The following credit should have accompanied "Neutron Activation Analysis of Blood and Blood Serum for Copper and Zinc," by C. C. Thomas, Jr., G. P. Tercho, and J. A. Sondel of Western New York Nuclear Research Center at Buffalo, N. Y. in *Nucl. Appl.*, **3**, 53 (1967):

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