Chitosan, deacetylated chitin, was found to be an effective adsorber of acidic pesticides, such as 2,4,D and 2,4,5-T. The abundance of chitin makes this an attractive method for decreasing these types of pesticides in aqueous solutions.

The dental readership of Nuclear Technology will be interested in the study of zinc adsorption onto hydroxyapatite because of the mordant properties of this ion in coupling restoration materials with the tooth. This paper has an excellent treatment on the kinetics of zinc uptake onto the apatite surfaces.

X-ray photoelectron spectroscopy was used to study lead adsorption on MnO_2 and cobalt on illite. Lead appears to oxidize to Pb^{4+} with the possible reduction of manganese at the MnO_2 surface; whereas, Co^{2+} retains its oxidation state on illite, being present as hydrated Co^{2+} below a pH of 6, as $Co(OH)_2$ above 7.5, and probably as $Co(OH)^+$ between pH values of 6 to 7.5. Studies using this technique have provided insights into the nature of surfaces and adsorbed ions, and future studies should help advance the knowledge of surface reactions.

Two papers stand out in terms of probable interest to the readers of Nuclear Technology, especially those interested in the migration of radionuclides through soils, sediments, and rocks. The first paper, "The Power Exchange Function: A General Model for Metal Adsorption onto Geological Materials," by Donald Langmuir, describes a model using two empirically determined constants and mass-action type equations for studies of cation adsorption. The model appears to work well for a large number of cations onto a variety of mineral surfaces. The second paper by Beall and Allard is "Sorption of Actinides from Aqueous Solutions Under Environmental Conditions." Their study showed that the oxidation reduction potential and pH of natural aqueous systems were considerably more important in the sorption of actinides on minerals than simple ion exchange.

In essence, there are 12 in-depth studies over a broad subject in which the common thread is the aqueous media. Although the papers are excellent, the volume is probably more suited for library purchases rather than personal use because of its diversity. However, almost anyone interested in surface chemistry should find one or more papers to be significant.

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International Advances in Nondestructive Testing (Vol. 8)

This is the eighth volume of a series that "publishes original research, development and application papers relating material properties to measurable physical phenomena," as stated in the Preface to the above-titled book. It contains 13 papers that indeed deal with a wide range of topics, including theoretical and laboratory investigations as well as applications to industrial problems.

This eighth volume places heavy emphasis on research-oriented papers. One of these papers deals with a new method for shaping and time-domain analysis of pulsed acoustic signals; according to the author, this may be a method that could replace the more complicated spectral analysis and could be used to distinguish various types of signal-attenuating mechanisms. Important to transducer design is a report on a computer study discussing the effects of the acoustic transducer/material interface, which can produce distortions of the ultrasonic signal. Multiple eddy-current measurements are the subject of another paper. The authors report on the application of a computer to sort out various materials properties with decision logic. The operation and design of photodiode arrays, useful to x-ray imaging and analysis, are briefly discussed in another article. A general paper on methods and means for error control in precision instruments is also included.

The more materials-research-oriented papers also deal with a variety of subjects. One of these papers, a review, discusses the present status of ultrasonics to determine fracture toughness nondestructively. Another review gives a short overview on the use of x rays to determine residual stresses. A progress report on the use of acoustic emission during fatigue crack propagation studies in hydrogen embrittled Zr-Nb alloys is also included. Finally, the use of electrical discharge to characterize the topography of a surface (due to fatigue, for example) is briefly discussed.

One of the applications-oriented papers describes experiences gained in growing and acoustic monitoring of cracks of known size, location, and orientation (Heavy-Section Steel Technology Program). Another report deals with a semi-automatic ultrasonic thickness gauge for evaluation of boiler generator tube corrosion. The accuracy and repeatability of eddy-current measurements on tubes in the field—according to ASME recommendations—is discussed in a third paper. All the applications papers give a good insight into some of the real-world problems.

In general, this volume contains one or more articles for anyone interested in nondestructive testing. Aside from some typographical errors, most of the papers are of good quality with one exception. A paper on optical sonar system concepts should have been edited and retyped before printing. Even worse, the figures have not been included. Overall, however, this volume seems to be a worthwhile addition to the nondestructive testing literature.

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