SYMPOSIUM ON POSTIRRADIATION EFFECTS IN POLYMERS

INTRODUCTION

By Donald J. Metz[1]

During the past few years a number of isolated reports concerning postirradiation changes in polymeric systems came to the attention of various members of Joint Subcommittee II on Effects of Nuclear and High-Energy Radiation, of ASTM Committees D-9 on Electrical Insulating Materials and D-20 on Plastics. It appeared desirable to bring this matter to the immediate attention of other ASTM members, lest properties of irradiated materials be measured and reported without due regard to the postirradiation, pre-testing history of the samples.

The fact that long-lived active species exist in irradiated polymers, together with some of the recent techniques for studying the identity, concentration, and lifetimes of these species is the subject matter of one of the papers. Three other papers deal with actual postirradiation changes in physical and chemical properties of a few selected systems. Although the full implications of the possible effects of these postirradiation reactions have neither been exhausted nor fully explored, it appears that a certain amount of caution must be applied when one tests the changes in physical and chemical properties effected by radiation in a polymer, in the event that postirradiation reactions may be operative. The significance to the American Society for Testing Materials of these aspects of postirradiation effects is discussed in the first paper.

It is the hope of the sponsors of this symposium that the message carried in these preliminary investigations will alert others to the existence of postirradiation effects, and that this will, in turn, stimulate further work in this field, especially as these effects concern the application of ASTM specifications and test methods to irradiated polymeric systems.

[1] Brookhaven National Laboratory, Upton, N. Y.; Symposium Chairman.