

SYMPOSIUM ON THE CHEMICAL AND PHYSICAL EFFECTS OF HIGH-ENERGY RADIATION ON INORGANIC SUBSTANCES

INTRODUCTION

BY E. S. FREEMAN¹

Rapid advances are being made in research on radiation effects on inorganic substances in the solid state. In spite of this, however, there are large gaps in our present knowledge of the mechanisms of the interaction of high energy photons, such as X-ray and gamma-ray radiation, and corpuscular radiation, such as neutrons with inorganic solids. To understand these mechanisms one must know both the chemical and physical processes that result from the interaction of solids with radiation. There are basic interrelationships between the chemical and physical changes induced by radiation and the resulting chemical properties of substances. Periodically, it is highly desirable for the most efficient pursuit of

research to consider our state of knowledge as well as to learn of recent and significant advances in the field. This is primarily the purpose of the present symposium.

Foremost international authorities and investigators were invited to present lectures which included both reviews and their latest theoretical and experimental work. The topics covered include (1) the most recent theoretical developments in radiation damage in solids, (2) the use of optical, electrical conductivity and electron spin resonance techniques for studying radiation damage and interpretation of the experimental findings, (3) the most recent investigations of the radiation-induced changes in the chemical reactivity of solids, and (4) interpretation of the results of investigations of the radiation-induced decomposition of solids.

¹ U. S. Army Munitions Command, Picatinny Arsenal, Dover, N. J.; Chairman of Symposium Committee.