

A PLASTIC STRESS ANALYSIS OF CYLINDRICAL WAFERS
UNDER ELASTICALLY DEFORMABLE COMPRESSION PLATES

INTRODUCTION

The field of high-pressure research has stemmed primarily from the pioneering efforts of P.W. Bridgman, and is fast becoming one of the most lucrative areas of future research and development. The knowledge thus far acquired has led to the discovery of synthetic diamonds and emeralds, and has added evidence to the belief that other substances such as the metallic forms of ammonia and hydrogen can be created in the appropriate environment of ultra high-pressure and temperature. Even though the organizational unit of High-Pressure Technology is embodied in the structure of the American Society of Mechanical Engineers, the list of contributors to this field includes chemists, physicists, geophysicists, geo-chemist, metallurgist, geologists, engineers, and many others. The diversified knowledge of these researchers has manifest itself in terms of the many avenues of approach available to the solution of high-pressure problems. The utility of chemical, electrical, optical, and mechanical changes produced in high-pressure environments have been exploited to obtain a better understanding of the phenomenon involved.

The problem of specific interest here is the study of pressure gradients existing in a specimen situated between a pair of compression plates, called anvils. The resistance