

CONTENTS

	PAGE
PROF. A. R. UBBELOHDE Foreword ..	
GROUP 1 Intermolecular Forces and Thermodynamic Properties	
J. S. ROWLINSON Introduction	5
J. A. M. VAN HEST and G. A. M. DIEPEN Solubility of naphthalene in supercritical methane	10
E. U. FRANCK Dense supercritical water as an ionising solvent	19
D. S. TSIKLIS and J. N. VASILIEV Surface tension between two immiscible gases	25
H. L. WELSH, J. C. STRYLAND and A. D. MAY Raman spectra of compressed gases ..	31
C. A. SWENSON Pressure-volume-temperature measurements on solids	39
(Miss) C. SUSSE and B. VODAR Determination of the elastic constants of solids as a function of pressure	46
W. B. DANIELS and CHARLES S. SMITH The pressure variation of the elastic constants of crystals	50
GÖSTA ANDERSSON The partial specific volume of polymers at high pressures	64
DISCUSSION OF PAPERS IN GROUP 1	69
GROUP 2 Apparatus for High Pressures	
F. DACHILLE and RUSTUM ROY Modifications of opposed anvil devices	77
G. MUNDAY and D. M. NEWITT The rupture of bursting discs under static and dynamic pressure loads	85
K. E. BETT and D. M. NEWITT The use of a high-pressure differential mercury manometer for the accurate calibration of free-piston gauges	90
DISCUSSION OF PAPERS IN GROUP 2	
GROUP 3 Properties of Matter at Very High Pressures	
J. A. POPLÉ Introduction to physics and chemistry at ultra-high pressures	119
H. G. DRICKAMER The approach to the metallic state at high pressure	122

G. C. KENNEDY, A. JAYARAMAN and R. C. NEWTON The fusion curve and polymorphic transitions of caesium at high pressures	128
H. M. COHEN and RUSTUM ROY Effects of high pressure on glass	133
P. L. SMITH, J. H. KING and H. A. GEBBIE Pressure effects in some III-V compounds	140
R. S. BRADLEY, J. D. GRACE and D. C. MUNRO The electrical conductivity of some organic and inorganic solids under pressure. I. Phthalocyanine and copper phthalocyanine	143
R. S. BRADLEY, A. K. JAMIL and D. C. MUNRO The electrical conductivity of some organic and inorganic solids under pressure. II. Ferrous orthosilicate and spinel Fe_2SiO_4	147
S. A. F. MURRELL The effect of high pressure on brittle fracture	
H. LL. D. PUGH and D. A. GUNN Application of high pressures to the cold extrusion of metals. I. Cold extrusion of brittle materials against a liquid pressure	
H. LL. D. PUGH and K. ASHCROFT Application of high pressures to the cold extrusion of metals. II. Hydrostatic (ramless) extrusion of metals by liquid pressure	163
DISCUSSION OF PAPERS IN GROUP 3	

GROUP 4

Chemical Reactions at High Pressures

R. H. WENTORE, jnr. Chemistry at high pressures	
H. P. BOVENKERK The incorporation of foreign atoms in diamond crystals	191
R. J. WITHEY, J. E. MCALDUFF and E. WHALLEY Pressure effect and mechanism for the acid-catalysed hydrolysis of β -propiolactone	196
S. K. BHATTACHARYYA Catalytic activities of nickel, cobalt and iron halides in the high pressure syntheses of carboxylic acids and esters from carbon monoxide	202
M. G. GONIKBERG, V. M. ZHULIN and B. S. EL'YANOV Study of steric effects in chemical reactions by means of high pressure	212
A. GILCHRIST Kinetic study of the photo-initiated polymerisation of ethylene at high pressure and 25°C	219
J. A. LAMB and K. E. WEALE Some liquid-phase copolymerisations at high pressures	229
A. NEUHAUS Hydrothermal experiments on the miscibility of Al_2O_3 - Cr_2O_3 at temperatures up to 800° and pressures about 2000 atmospheres	237
DISCUSSION OF PAPERS IN GROUP 4	240
PROF. A. R. UBBELOHDE Concluding remarks	246