

S7.(a) Dept. of Chemistry,
University of Southampton,
Southampton, Hants.

Tel. Southampton 56331
ext. 529.

Physico-chemical studies of rate-
processes in liquids, of ionic
migration, of electrode processes.
Systems include aqueous and non-
aqueous media, high-temperature
aqueous and high-temperature molten
salt systems.

Graham Hills (Prof.)
Peter Ovenden

S7.(b) Dept. of Chemistry,
University of Southampton,
Southampton, Hants.

Tel. Southampton 56331.
ext. 594

1. Pressure dependence of ionic
conductivity in solids.
2. Pressure dependence of ionic
conductivity in fused salts.
3. Effect of dissolved inert gases
on transport in fused salts.
4. Solubility of inert gases in fused
salts.

B. Cleaver
A. Barton
J.F. Williams

Pressure range to 3 kb. Temperature range 25 - 500°C.
Working volumes up to 2 litres. Gas and liquid
compressors. Miniaturisation techniques include
pulse-driven syringes, electrical timing devices
and various electrochemical derivatives.

1. 0 - 500 bars, temperatures up to 500°C.
- 2, 3 and 4. 0 - 2 kb, temperatures up to 600°C.

In both cases the vessels are heated externally and
pressure is transmitted to the system under
investigation by argon.

S8. Standard Telecommunication
Laboratories,
London Road,
Harlow, Essex.
Tel. Old Harlow 2061.

Inorganic chemical synthesis to
100 kb. Physical and metallurgical
studies to 75 kb. Hydrothermal
synthesis at 25 kb. Terminal solid
solutions and intermetallic phases in
binary systems : mixed oxide synthesis.

Physical studies on semiconductors,
e.g. Gunn phenomena in GaAs.

Detailed study of operating
mechanisms of v.h.p. equipment.
Design and construction of equipment
for 150-200 kb/1000 - 2000°C.

Isostatic cold pressing to 10 kb.

Studies for cold forming processes in
the 10 kb range.

John Lees
D.A. Gunn
W. Main
C.H.L. Goodman.

Tetrahedral anvil apparatus of 1.91, 2.86 and 3.80
cm edge lengths.

Cylindrical apparatus for 25 kb, working volume
3.80 cm x 3.80 cm dia.

High pressure X-ray cameras.

New type of h.p. apparatus under development for
150 - 200 kb range.

Pumping equipment to 10 kb.

<u>Organisation</u>	<u>Field(s)</u>	<u>Equipment</u>
S9. Standard Telephones and Cables Ltd., Quartz Crystal Division, Edinburgh Way, Harlow, Essex. Tel. Harlow 26811.	Hydrothermal synthesis of quartz, and supporting investigations (e.g. solubility and phase studies). R.W.T Rabbetts.	Simple autoclaves, mostly with Bridgman-type closures, rated for use up to 2 kb and 400°C. (Laboratory vessels range in size from about 2 ml. to over 1 L. in capacity; production vessels have capacities of about 56 and 100L.)
T1. Tap and Die Development Centre Ltd., Sabel Works, Biggleswade, Beds. Tel. Biggleswade 2316.	Manufacture of specialist equipment. K.J.B. Wolfe A.H. Carding J.D. Lane	(1) High pressure tensile testing rig of N.E.L. design is being marketed for use to 15 kb. (2) 150 ton press, stroke rate 3" per second.
T2. Towler Brothers (Patents) Ltd., Electraulic Works, Rodley, Nr. Leeds, Yorks. Tel. Pudsey 77721.	Design and manufacture of recip- rocating pumps. Tom White. R.W. Hall	30 h.p., direct driven 1500 r.p.m. up to 1 kb. 60 h.p., direct driven 1500 r.p.m. up to 1 kb. Prototype 1966. 100 h.p., direct driven 1500 r.p.m., up to 3.5 kb. Higher pressures are expected.
U1. Unilever Research Laboratory, Colworth House, Sharnbrook, Beds. Tel. Sharnbrook 202.	Effects on biological materials. A.J.H. Sale	Pressure to 8 kb, - 25°C to 120°C. Working volume : Few cu. in.
U2.(a) United Kingdom Atomic Energy Authority, Research Establishment, A.E.R.E., Harwell, Didcot, Berks. Tel. Abingdon 4141 ext. 4839	Equipment development and adaption of existing techniques to study effect of pressure and temperature on the actinide elements and their alloys with particular respect to their basic physical properties. Resistivity, precision lattice parameters, compressibility, P/T phase diagrams, single crystal growth and others as become necessary. Eric King. J.A. Lee	Belt and other opposed conical piston systems 0 - 166 kb room temperature to 1000°C; supported basic die and piston 0 - 40 kb; ultra high pressure opposed anvils and cylinder 0 - 500 kb (to be developed for temperatures); cryogenic clamps 0 - 15 kb, room temperature to liquid helium; X-ray piston/die and opposed anvils 0 - 10 kb 0 - 500°C. Working volumes small because of glove box limitations on press size.
(b)	(a) Design and utilization of hydrostatic extrusion. (b) Hot and cold isostatic pressing and high temperature sintering of ceramic, cermet and metal powders.	Air-hydraulic cold pressing up to 7 kb. Hot pressing up to 3.5 kb in argon at temperatures up to 1500°C. Capacity of vessels varying up to 3 in. dia. x 3 ft. long.