) with values obtained using the same
the bcc alloy experiments. One great
t pressure can be deliberately changed
K and 4.2 K. This permits the study
be shown to have a strong influence

tal Techniques

yostat

temperature of Zr at zero pressure[6] a
his cryostat, though conventional in
e special requirements of the pressure
air of tongs[7]. A mechanism had to
could be operated without being re-
that the pressure could also be varied
s done by means of a stainless steel
o the driving screw of the tongs like
after use in order to reduce the heat
nsport was relatively high along the
pport of the tongs, thus limiting the
0.4 K. Since the tongs were clamped
hey could be replaced by any other
mensions.

e Apparatus

cells have been employed: a piston-
transmitting medium, another piston-
, and a Bridgman opposed anvil cell.
air of tongs[7] on the first type of cell
junction with a clamp technique[8,9]
pressure cells have been described in
pared briefly.
', a piston-cylinder cell containing a
nd isoamyl alcohol[10], pressures will
ditions (even though this liquid will
emperatures). This fact is expressed

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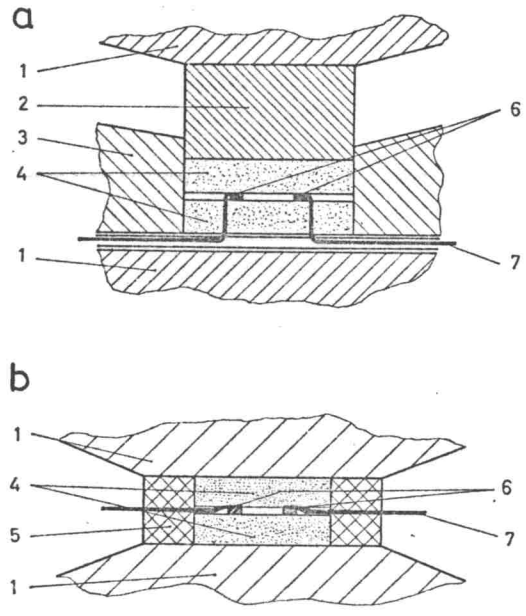

Fig. 1. Pressure cells: *a*) piston-cylinder cell, *b*) Bridgman opposed anvil cell. *1* tungsten carbide anvils, *2* steel piston, *3* steel cylinder, *4* steatite discs, *5* pyrophyllite ring, *6* samples, *7* electrical leads (in type *a* isolated between mica sheets). The picture is schematical and not to scale

by the relatively narrow superconducting transition width, which is the same as at zero pressure. However, this cell is not as easy to handle as a solid cell and can present difficulties, especially if the samples have to be connected to potential and current leads for electrical resistance measurements. In our investigations it was only used to ensure that the results were not dependent on the pressure technique.

The cell used in the pressure tongs is constructed similarly[7]. It consists of a cylinder containing the pressure medium and of a piston, which will be pressed into the cylinder (Fig. 1a). Generally, this type of cell can be filled with liquid transmitting media. In our case, the dimensions of the cell surroundings, fitting into the tongs, only permit the use of solid media. If steatite is used, as is our common practice, the pressures may be regarded as "quasihydrostatic", because of the plasticity of steatite at high pressures, and also homogeneous, since the surrounding cylinder prevents the pressure medium from creeping away.

The opposed anvil cell (Fig. 1b) consists of two discs of steatite surrounded by a ring of pyrophyllite[9]. This cell is squeezed between