existing literature values[5] of $T_c(p)$ with values obtained using the same pressure technique as employed in the bcc alloy experiments. One great advantage of this technique is that pressure can be deliberately changed at any temperature between 300 K and 4.2 K. This permits the study of cold work effects, which will be shown to have a strong influence on T_c.

Experimental Techniques

Cryostat

Because of the low transition temperature of Zr at zero pressure[6] a He^3 cryostat was constructed. This cryostat, though conventional in principle, was adapted to meet the special requirements of the pressure apparatus used – in our case a pair of tongs[7]. A mechanism had to be provided, by which the tongs could be operated without being removed from the He^3 cryostat, so that the pressure could also be varied at helium temperatures. This was done by means of a stainless steel tube, which could be connected to the driving screw of the tongs like a socket wrench and disconnected after use in order to reduce the heat influx. Nevertheless, the heat transport was relatively high along the mechanically strong mounting support of the tongs, thus limiting the minimum temperature to about 0.4 K. Since the tongs were clamped mechanically to the He^3 bath, they could be replaced by any other pressure apparatus of the same dimensions.

Pressure Apparatus

Three different high pressure cells have been employed: a piston-cylinder cell with a solid pressure transmitting medium, another piston-cylinder cell with a liquid medium, and a Bridgman opposed anvil cell. The forces were generated by a pair of tongs[7] on the first type of cell and by a hydraulic ram in conjunction with a clamp technique[8,9] on the other cells. Although the pressure cells have been described in detail elsewhere, they shall be compared briefly.

In the so-called "teflon cell", a piston-cylinder cell containing a 1:1 fluid mixture of n-pentane and isoamyl alcohol[10], pressures will come closest to hydrostatic conditions (even though this liquid will freeze when cooled to helium temperatures). This fact is expressed

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