fuses are one possibility. Here the hafnium wire would be sheathed with an appropriate thickness of palladium. Such a fuse wire would withstand corrosive conditions for long periods without failure, but would, if overheated disrupt explosively and provide instantaneous protection for the circuit.

Applications might also exist in the field of age-hardening and dispersion-strengthened alloys. Thus small quantities of yttrium and palladium, dissolved stoichiometrically in an inert metal matrix should react upon suitable heat treatment to produce a finely divided compound of considerable strengthening power (10).

Interesting possibilities can be discerned in the sintered carbide field. Cobalt, the normal cement used for the liquid-phase bonding of carbides is unfortunately not very resistant to oxidation at high temperatures and this restricts the high temperature applications of such materials. Palladium or a palladium-based alloy would be more resistant to oxidation and would also react chemically with the carbide in the way described by Brewer. By suitably proportioning the amount of palladium added to the carbide mixture improved oxidation resistance might be achieved with stronger chemical bonding between the cement and the carbide. Appreciable improvements might result even if the palladium replaced only a small proportion of the cobalt binder (11).

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A Rhodium-Platinum Probe for Flame Velocity Measurement

A probe for velocity vector measurements in flames consists of a spherical tip with one pressure point on the axis and four others spaced equally around it at 40° to the central point. Pressure differences between opposite pairs of these holes, when referred to the pressure at the central point, give gas flow direction and velocity. Stainless steel probes are suitable for cooled airflows or, when water-cooled, for large industrial furnaces, but in the relatively much smaller dimensions of gas turbine combustion systems the application of this technique depends on devising a method permitting the construction of compact probes in a manner suitable for use at kerosene-air flame temperatures.

A technique of construction has recently been developed at the National Gas Turbine Establishment in which both the spherical probe head and the five lengths of hypodermic tubing are fabricated in 20 per cent rhodium-platinum, the whole then being brazed to a stainless steel water - cooled probe body. The stainless steel hypodermic extension tubes and water jacket then pass through a cylindrical brass block, carrying a 360° scale to indicate angle of rotation, to a cluster of unions. This assembly can be used in flame temperatures up to 1800°C.

A complete water-cooled probe unit in which the rhodium-platinum head is nickel-brazed to the stainless steel probe body