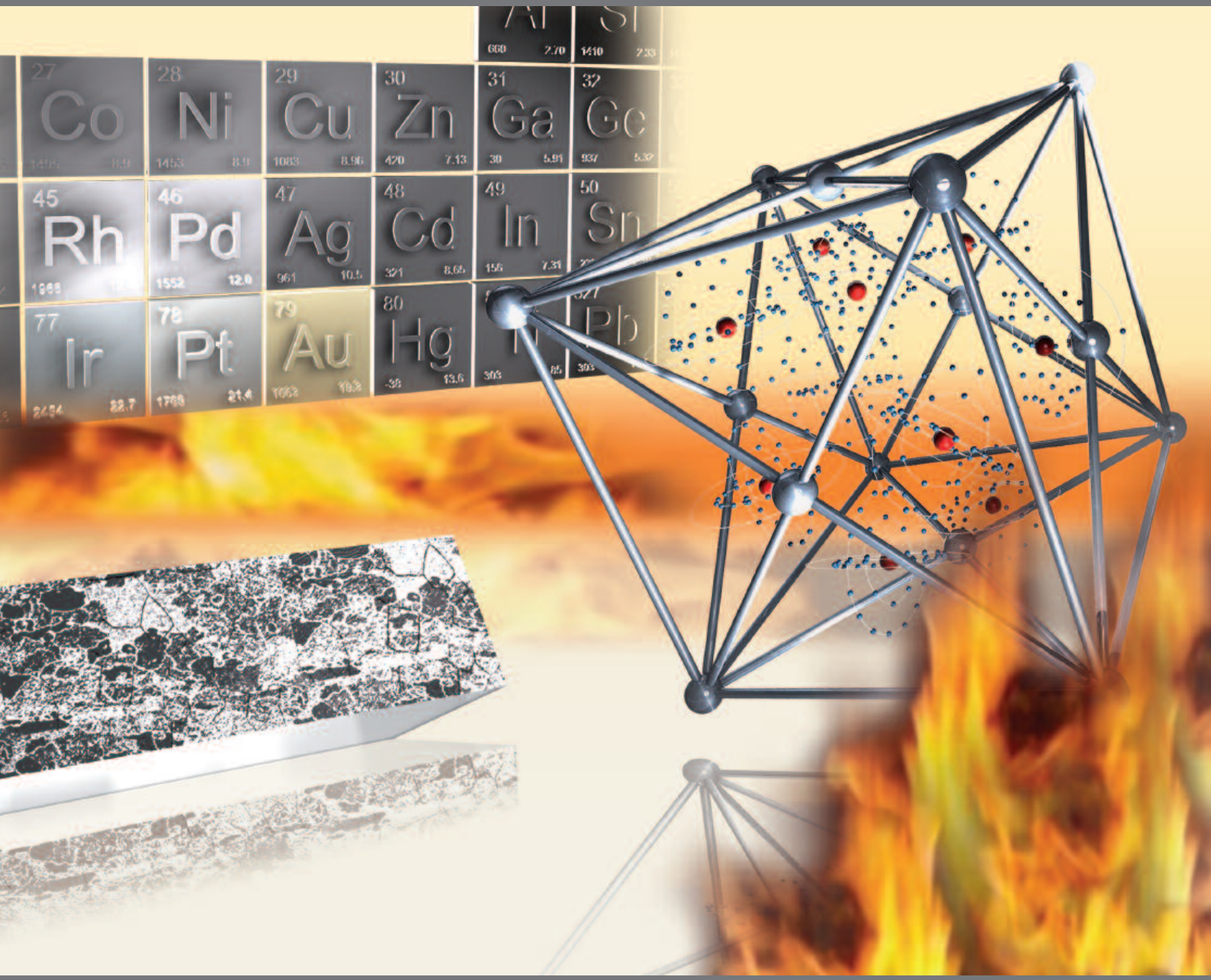
Heraeus



DPH
Dispersion Hardened
Platinum Materials

How platinum is enhanced

Dispersion hardened platinum (DPH) – the synthesis of technological excellence and experience

W. C. Heraeus can look back on more than 150 years of experience in processing precious metals. Since its foundation, the company has devoted itself to platinum and the platinum group metals. Through close co-operation with customers in industry and in analytical laboratories W. C. Heraeus has developed the process of dispersion hardening (DPH) and continually optimised it. As a result application specific materials like DPH*plus* or DPH*hs* can be provided.

Advantages which pay

Economical use of precious metal together with excellent material properties

Nowadays we cannot imagine the glass industry or a laboratory which does not use the material platinum. Feeder systems, stirrers, plungers, crucibles and dishes are only a few of the multiplicity of applications for this exceptionally resistant precious metal.

Due to the never ceasing development of products and production processes, demands on the platinum materials being used have also increased. With the development of dispersion hardened platinum, W. C. Heraeus has taken up this challenge and has adapted the essential material properties to meet today's requirements. Through a special process W. C. Heraeus has created with DPH a new class of materials and has optimised it for special applications:

- High strength with good ductility in the high temperature range (up to 1700°C)
- Excellent weldability while the strength is maintained
- Exceptional corrosion resistance and a more stable microstructure over longer service times
- Less recrystallisation

These characteristics allow for longer service lives for the individual components and permit the precious metals to be used more economically, for instance through reduced wall thicknesses. The higher strength of the material also has a stabilising effect on the equipment manufactured from it. Strengthening components of e. g. molybdenum, ceramics or refractory metals thus become effectively redundant. Large components profit from the combination of strength and ductility.

As a result of their optimised combination of material properties, Heraeus DPH alloys achieve a distinct improvement in economic viability.

A new class of materials

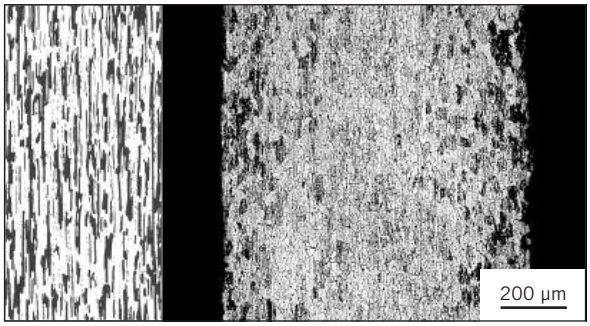
DPH in comparison

The fine crystalline structure of DPH remains unchanged after 30 hours exposure at 1600°C in contrast to conventional platinum materials.

The inclusion of finely distributed zirconia as a dispersoid impedes grain growth to a temperature just below the melting point.

Due to the modified, finer microstructure, DPH is considerably less sensitive to corrosion processes along the grain boundaries than comparable materials. This ensures better corrosion resistance.

PtRh10 after 30 hours at 1600°C



PtRh10-DPH after 30 hours at 1600°C

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