these atoms essentially come to rest on the same low energy planes. There is hence little tendency to the formation of other configurations, and after the perturbation the crystal face is virtually unchanged.

A further curious feature from a metallurgical viewpoint is the absence of any marked grain growth—that is increase in crystal dimensions—during the restructuring process. In metals it is usual to observe grains increasing in size under conditions of high atomic mobility, as occurs for example during annealing at elevated temperatures. The driving force for this grain coarsening is normally considered to be the reduction of grain boundary area, with the consequent reduction in total free energy of the structure. Similarly in systems consisting of isolated particles, such as the precipitated phase from a metallic solid solution, growth will occur in the larger particles at the expense of smaller ones, also due to the reduction in particle surface area and thence of the surface energy contribution. The absence of any significant crystal growth in the gauze samples is perhaps further evidence of the low surface energy or remarkable stability exhibited by the crystal facets in the catalytically reacting environment.

From this qualitative discussion it will be apparent that considerable scope exists for further investigation of the detailed mechanism of restructuring of the rhodium-platinum catalyst in hydrogen cyanide production, and for quantifying the energy relationships between grain boundaries, various crystal planes, and so forth, in the alloy. If the ideas outlined prove to be correct, it would be possible in principle to produce a dimensionally stable Andrussow catalyst from a collection of suitably faceted crystallites. However the economic practical realisation of such a material may be difficult to achieve, except perhaps in a fluidised bed.

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Platinum Silicide Fuses Provide Rapid Response

The electronics industry has produced another significant advance in the technology of semiconductor devices. Recently reported work by Advanced Micro Devices, Sunningdale, California, has produced programmable read only memory (PROM) fuses which utilise platinum silicide fuse links on low power Schottky chips (*Electronic Design*, 1978, **26**, (7), 23).

Nickel-chrome fuses are most commonly used, together with titanium-tungsten or phosphorus-doped polysilicon materials, but the advantages of platinum silicide have been shown by life tests extending to two billion fuse hours without a single fuse oriented failure. Such fuses are, of course, blown when the surface tension of the molten fuse material divides the fuse link and draws the material back. In the case of platinum silicide the gap formed may be 1 to 3 microns, some ten times longer than that formed by nickel-chrome materials.

The physical properties of platinum silicide—it is considerably harder, less ductile and has greater chemical inertness than the other metal systems—together with the width of the gap formed, retard the regrowth of the fuse link.

With a recommended programming time of only 50 microseconds, compared to 2 milliseconds for typical nickel-chrome PROMs, the fuses have obvious advantages.