etching much higher and the random orientation of grains causes more non-stable high-index planes to be exposed at the surface of the sample.

The rhodium-platinum wires have a high degree of longitudinal texture of the (100) type in their surface layers. This means that a higher than average number of grains have the ⟨100⟩ direction parallel to the wire axis. The ⟨100⟩ planes are stable. Thus, etching on these planes will be much slower than on any other adjacent plane, and etching along the ⟨100⟩ planes perpendicular to the wire axis will be even slower. As a result, grains with a longitudinal texture close to ⟨100⟩ will be more stable. The other grains will be attacked more readily and some of them will be separated from the matrix and removed by the stream of reactant gases. The SEM studies (18) of post-reaction dusts revealed crystallites with the dimension of a few μm and with habit planes looking very similar to the crystallites developed on oriented single crystal planes, as shown in Figure 3. As a result, the relative number of grains in the surface layer with an orientation of the (100) type is increased. This was actually observed.

The etching processes observed on platinum and rhodium-platinum wires and single crystals, presented above, can explain the crystallographic features observed on catalytic gauzes used in ammonia oxidation. It can also explain why well developed crystallites are found in post-reaction dust (18). However, it does not account for the way the loss of material takes place, although it seems that the most effective way for the described model to operate will be through the formation of volatile products.

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Palladium-Nickel Plating

The economic advantages of palladium-nickel as a replacement for electrodeposited gold in the electronics industry have been demonstrated many times during recent years and an extended study of their relative performance recently reported by K. J. Whitlaw of LeaRonal U.K. (*Trans. Inst. Met. Finish.*, 1984, **62**, (1), 9–12) serves to substantiate the potential value of these deposits.

The experimental work shows that a duplex layer of 2.5 to 3.0 μm 70 palladium–30 nickel followed by 0.1 to 0.25 μm of acid hard gold is to be recommended as a replacement for 2.5 μm gold deposited on a copper substrate such as a printed circuit board. This combination offers freedom from porosity, stability of contact resistance, excellent resistance to wear and to corrosion, and also resistance to copper diffusion at elevated temperatures.

These properties, while being identical to those secured with a conventional gold deposit, offer savings in cost of as much as 65 per cent.