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1020. Mechanical tubing. *(USA)*
John A Vaccari, *Mater Des Engng, 62 (3), Sept 1965, 121–136.*

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1021. Ion-pair processes in CH_3Cl by photoionization. *(USA)*
V H Cibeler and J A Walker, *J Chem Phys, 43 (5), Sept 1965, 1842–1843.*

41. Metals and alloys

41 : 30

Optical and structural properties of oxidized titanium films. See abstract number 980.

41 : 30

Source contamination effects on the epitaxy of Ge films on Ge. See abstract number 981.

41 : 33

Progress in the continuous observation of thin-film nucleation and growth processes by electron microscopy. See abstract number 982.

41 : 33 : 42

Structure and annealing behaviour of metal films deposited on substrates near 80°K: I. Copper films on glass. See abstract number 983.

41 : 37

Arc-melting of large refractory metal ingots. See abstract number 987.

41 : 37

Progress of the remelting technique for steels in vacuum arc furnaces. See abstract number 998.

41 : 37

Vacuum consumable arc-melting of 50 ton (steel) ingots. See abstract number 1003.

41 : 37

Pool size in vacuum consumable electrode arc-melting of alloy steel ingots. See abstract number 1004.

41 : 37

The relation between vacuum and purity in float-zone melting of refractory metals. See abstract number 1005.

41 : 33 : 37

Zone refining tungsten sheet bars in an electron beam furnace. See abstract number 1009.

41 : 37

Levitation melting of beryllium and aluminium. See abstract number 1011.

41 : 37

Vacuum and inert atmosphere processing of refractory metals. See abstract number 1013.

41 : 37

Vacuum casting operations using a plasma resistance furnace. See abstract number 1014.

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1022. Neutral and ionic desorption of caesium from tungsten. *(USA)*
L D Schmidt and R Gomer, *J Chem Phys, 43 (6), Sept 1965, 2055–2063.*

41 : 30

1023. Metastable alloy films. *(USA)*
Metastable alloy films of a number of binary alloy systems with limited terminal solubilities were prepared by simultaneous vapour deposition of the two components onto a cold substrate. The resulting structures are either crystalline solid solutions (of concentrations higher than the terminal solubility) or amorphous solutions. Several examples for both types of structures are described. The conditions for occurrence of the amorphous structure are found to be a difference of atomic radii of the components in excess of 10 per cent and a sufficiently low substrate temperature. The composition range of the amorphous structure increases with increasing difference of the atomic size of the components. Amorphous structures generally decompose at about 0.3 T_m (where T_m is the average melting temperature), while metastable crystalline structures decompose near 0.45 T_m. Thus, for many of the alloys studied, the metastable structure persisted to room temperature and above. *(USA)*
(Author)
S Mader, *J Vac Sci & Tech, 2 (1), Jan–Feb 1965, 35–41.*

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1024. Growth and structure of electrodeposited thin metal films. *(USA)*
The growth and structure of thin electrodeposits of several metals on single-crystal substrates have been studied by means of electron diffraction and electron microscopy. Deposits of copper on nickel, nickel on copper, and gold on copper show a highly perfect orientation at all thicknesses up to 1000 Å. All deposits studied were continuous for thicknesses greater than 50 Å. Gold deposits of 15 Å were discontinuous on the (111) face. Few growth twins were found, but double positioning structures occurred in both nickel and gold films. Evidence for the enhanced nucleation of copper deposits on substrate twins was found. *(USA)* (Author)
K R Lawless, *J Vac Sci & Tech, 2 (1), Jan–Feb 1965, 24–34.*

42. Glass, ceramics and refractory oxides

42 : 33 : 41

Structure and annealing behaviour of metal films deposited on substrates near 80°K: I. Copper films on glass. See abstract number 983.

45. Soldering, welding, brazing, solders

45 : 33

1025. Electron beam welding. *(Great Britain)*
A brief consideration of this now rapidly developing technique with particular reference to an examination of the application of the high voltage class of welding machine. *(Great Britain)*
M J Fletcher, *Engl elect J, 20 (5), Sept–Oct 1965, 15.*

45 : 21

1026. The production of vacuum pumps and components by vacuum brazing. *(USA)*
A programme of research work was carried out with Ni-B-Si type alloys to investigate their mechanical properties, and the characteristics of various shapes of joints, to enable a vapour diffusion pump to be designed in stainless steel that would be favourably suited for vacuum brazing. The assemblies to be brazed were loaded onto a carrier which was introduced into a radiantly heated vacuum furnace, the pressure during brazing being maintained at approximately 2×10^{-4} torr. On completion of the brazing run the components were clean and, if proved satisfactory on test, constituted a finished assembly. It is claimed that the method developed enables a complicated product to be formed from simple parts which can readily be assembled by unskilled labour, and subjected to a technically controlled joining process to yield components that would otherwise be machined at great expense from the solid.
M E Harper and R Carter, *Trans Vac Metall Conference, 1964, Amer Vac Soc, Boston, Mass, (1965), pp 175–188.*

46. Glass blowing, glass-to-metal and ceramic-to-metal sealing techniques

46

1027. Tinted glass soaks up the heat. *(Great Britain)*
This is a brief note about a method for making glass-to-metal seals which relies on a glass doped with ferrous oxide to ensure strong absorption of infrared radiation. Now used for the encapsulation of deposited-carbon resistors and ferrite switch contacts, the technique permits of highly localized heating. For this purpose a 600 W quartz iodine lamp in an 8 in. reflector gives a heating time of 5 sec for glass containing 3 per cent ferrous oxide. *(USA)*
Anon, *New Scientist, 27 (450), 1 July 1965, 23.*

47. Outgassing data, vapour pressure data, gettering data, residual gases in vacuum systems, residual gas analysis

47 : 37

A new instrument for determination of gas content in metals. See abstract number 996.

47 : 37

Some factors affecting (steel) degassing by the R-H circulating flow process. See abstract number 999.

47 : 37

Ladle-to-ladle vacuum stream (steel) degassing. See abstract number 1000.

47 : 37

The vacuum tap (steel) degassing process. See abstract number 1001.