

and *Powder Metallurgy*, Vol 42, No 3, 1995, 357-362. (In Japanese.)

Effects of C on sintering and properties of injection moulded Fe-4%Ni were investigated. A critical debinding temperature was found above which oxides precipitated during sintering. This is increased by increased %C. C has a significant effect on density and mechanical properties. When debound below the critical temperature C increases strength.

PHYSICOCHEMICAL PROCESSES IN SINTERING LOW ALLOY BINARY IRON POWDER MIXTURES

S.M. Romanov. *Izv. V.U.Z. Chernaya Metall.*, No 1, 1995, 57-58. (In Russian.)

Studies of compaction of Fe, Fe-1.5%Fe₇Cr₃, Fe-3%FeP₃, Fe-3%Cu and Fe-1%Ni₃O₂, at 700 MPa and sintering are described. Similar sintering patterns were found for all specimens except Fe-Cu where melting of the Cu and slow diffusion of Cu into Fe have effects.

RAPID SOLIDIFICATION OF STEEL DROPLETS IN PLASMA ROTATING ELECTRODE PROCESS

E. Wosch *et al.* (RWTH Aachen, Germany.) *ISIJ Int.*, Vol 35, No 6, 1995, 764-770.

Use of the Plasma Rotating Electrode Process to make steel powder, with a high N content, from barstock, in a Ar-N atmosphere is reported. Cooling rates are estimated at about 10⁴°C.sec-1. It is reported that cooling rates and microstructures can be predicted.

HIGH NITROGEN STAINLESS STEELS WITH HIGH STRENGTH AND CORROSION RESISTANCE

G.O. Rhodes, J.J. Conway. (Crucible Compaction Metals Inc., USA.) *J. of Metals*, Vol 48, No 4, 1996, 28-34.

It is reported that a (25 to 28)wt%Cr-22%Ni-6%Mn-(4 to 8)%Mo stainless steel with 0.6 to 0.9%N had been developed. Rapid solidification, PM and HIP were used in processing. N is shown to increase strength and corrosion resistance while retaining high ductility and impact strength.

HIGH DENSITY IRON SINTERED MATERIALS OBTAINED BY ROTARY COLD PRESSING

S. Stolarz *et al.* (Inst. Metali Niezelaznych, Gliwice, Poland.) *Metall. Proszkow.*, Vol 29, No 1, 1996, 12-23. (In Polish.)

Investigations of effects of rotary cold pressing on sintered properties of medium C and low and medium C alloy steels are described. Processing is described. Optimum conditions for rotary cold pressing are established.

Magnesium

RAPID SOLIDIFICATION PROCESSING OF A MAGNESIUM ALLOY

J.M. Yang *et al.* (University of California, Los Angeles, USA.) *Metall. and Mater. Trans A*, Vol 27A, No 5, 1996, 1363-1370.

It is reported that RS processing of Mg-13wt%Li-4%Si-1%Ag improves ductility and thermal stability. Melt spinning and heat treatment resulted in a fine dispersion of Mg₂Si in a Mg-Li solid solution.

Nickel

TENSILE PROPERTIES OF MECHANICALLY ALLOYED OXIDE DISPERSION STRENGTHENED NICKEL ALLOYS

J. Zbiral. (University of Technology, Vienna, Austria.) *Metall. and Mater. Trans A*, Vol 27A, No 5, 1996, 1371-1377.

Studies of MA of Ni-20%Cr alloys, dispersion strengthened with Y₂O₃, made from prealloyed or elemental powders are described. The powders were vacuum degassed, canned in steel and consolidated by hot extrusion. Powders and consolidated alloys were characterized for structure. The yield is shown to be higher when elemental powders are used. Optimum results required homogeneous Ni-Cr-Y₂O₃ powders.

Titanium

SIMULATION OF PRODUCTION OF TITANIUM POWDER

V.N. Antsiferov *et al.* *Tsvetn. Met.*, No 4, 1995, 77-79. (In Russian.)

Processes to make Ti powders, alloys and compounds from Ti sponge made from ilmenite are suggested. The sponge is high energy milled in protective atmosphere with de-oxidizers and alloy elements. Structural evolution was studied at macro-, meso- and microscopic levels and models proposed.

Tungsten

INVESTIGATION OF PM PRODUCTION OF DOPED TUNGSTEN WITH UNORTHODOX DOPING SPECIFICATIONS

H.J. Lunk. (Humbolt University, Berlin, Germany.) *Int. J. Refractory Metals and Hard Materials*, Vol 14, No 4, 1996, 271-277.

It is reported that a range of W materials, with unorthodox dopant specifications had been prepared from a commercial W blue oxide for comparison with 3 conventionally doped and an undoped material. Sintering was under standard conditions. Conclusions

concerning mechanisms are formed and some new dopant specifications for non-sag W are suggested.

RECYCLING OF TUNGSTEN SCRAP BY A MELT BATH TECHNIQUE

B. Lux *et al.* (University of Technology, Vienna, Austria.) *Int. J. Refractory Metals and Hard Materials*, Vol 14, No 4, 1996, 263-270.

'Menstruum' process technology for reclaiming W bearing scrap is described and discussed. The scrap is dissolved in Fe-C or Co-C melts and WC is subsequently precipitated.

Ceramic materials

MECHANICAL PROPERTIES OF MULLITE-ZIRCONIA CERAMICS

H. Ito *et al.* (Tokuyama College of Technology, Tokuyama, Japan.) *J. Japan Inst. of Metals*, Vol 60, No 2, 1996, 169-176. (In Japanese.)

It is reported that RS powders had been used to make mullite-ZrO₂ ceramics by hot pressing into discs at 1350 to 1550°C. Mechanical properties are compared with non-ZrO₂ materials. Transverse rupture strength was increased by increased temperature up to 1450°C to a maximum of 550 MPa. RS powders gave a fine microstructure. Fracture toughness of 3 MPa.m is reported.

Hard materials and tool steels

PREPARATION BY SPARK SINTERING AND MECHANICAL PROPERTIES OF CEMENTED TUNGSTEN CARBIDE

T. Hatayama *et al.* (Hiroshima University, Higashi-Hiroshima, Japan.) *J. Japan Inst. of Metals*, Vol 60, No 3, 1996, 301-310. (In Japanese.)

Effects of adding 1.8 to 7.8mol%MoS₂ to WC-20%Co, processed by spark sintering were investigated. Sintering conditions are described. Only WC, Co and MoS₂ were identified in the microstructures. The MoS₂ is shown to improve self lubrication but reduces hardness and impact strength.

Intermetallic materials

PREPARATION OF ALUMINIUM COATED NIOBIUM ALUMINIDE BY HIGH SPEED IMPACT TREATMENT

K. Katoh *et al.* (National Industrial Research Inst. of Nagoya, Nagoya, Japan.) *J. Japan Soc. Powder and Powder Metallurgy*, Vol 42, No 3, 1995, 330-335. (In Japanese.)

It is reported that NbAl powder had been coated with Al in order to enhance sintering of injection moulded parts. A high