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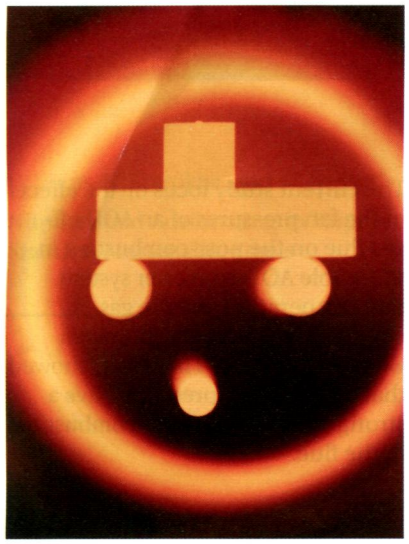

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Cover Photo:

The front cover image shows a view into a hot stage microscope used to characterize the interfacial reaction and wetting behavior of iron alloys and alumina substrates. The iron alloys varied in phosphorous and boron content and FeCrMnNi as-cast steels were investigated on Al_2O_3 samples. The experimental data can be applied to improve infiltration efficiency of open foam ceramics.

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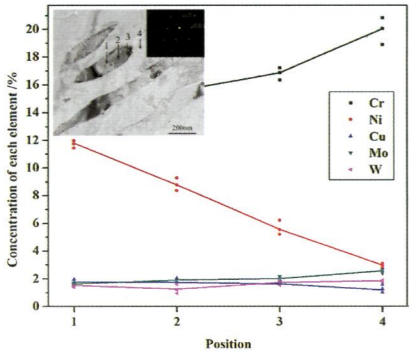
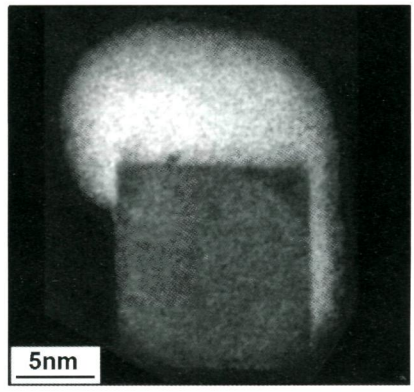


This study investigates the reverse transformation mechanism of martensite to austenite in 00Cr15Ni7-Mo2WCu2 super martensitic stainless steel by means of X-ray diffraction, transmission electron microscopy, the diffusion theory, and thermodynamic analysis. The experimental results indicate that the reversed austenite is diffusion in this type of steel.



Two-phase compound particles are formed during the rough rolling of Ti-added Nb HSLA steel when the processing of an ISP line is simulated. The particles are composed of a TiN-type cube-shaped core and an NbC-type cap-shaped deposit. The cap-shaped deposits formed epitaxially on one of the {100} facets of the cube-shaped precipitate. The formation of these precipitates is considered to be one of the main reasons why some HSLA steel compositions are less suitable for processing in thin slab direct rolling lines.

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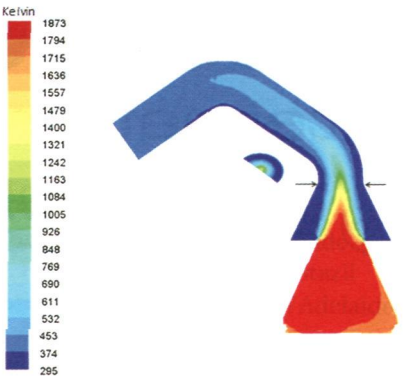
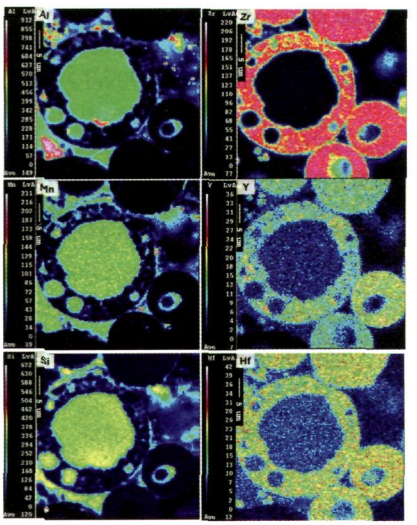
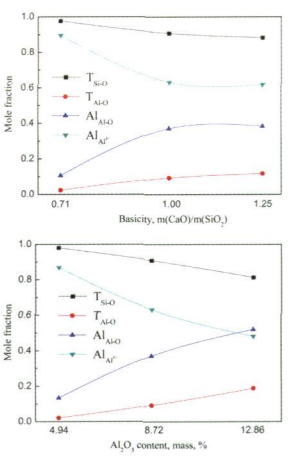


The current study focus on the effects of the fan pressures of an AOD off-gas flue on the post-combustion in the whole AOD converter system. The temperature and the gas compositions in the AOD system were investigated. The results showed that different fan pressures have a strong effect on the post-combustion in the flue.



The article describes fundamental investigations on the corrosion of ZrO_2–C refractories. The figure shows the structural evolution of zirconia grains during exposure to slag at 1550 °C: elemental mapping of zirconia granules.



In the liquid mould flux of $CaO–SiO_2–Al_2O_3–Na_2O–CaF_2$ system, Si–O tetrahedrons are the dominant structure species, and the degree of polymerization decreases with the increasement of basicity and the decreasement of Al_2O_3 content. Al–O tetrahedrons and Al^{3+} cations coexist in the liquid mould flux, and the mole fraction of Al–O tetrahedrons increases with the increasement of basicity and Al_2O_3 content.

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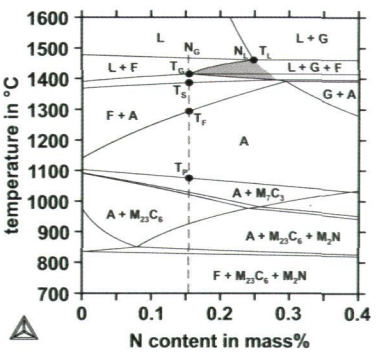
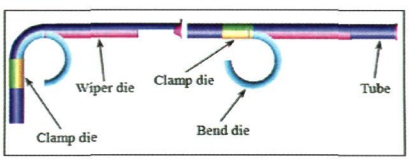
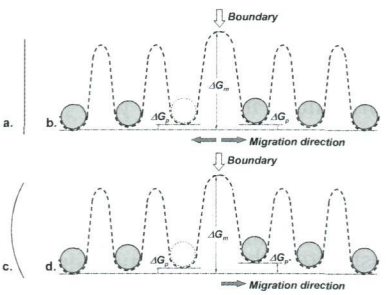


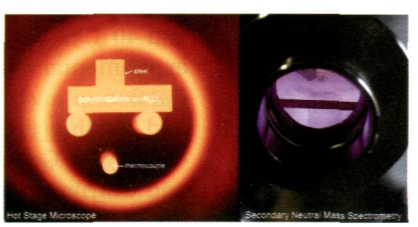
Nitrogen enhances the pitting resistance of stainless martensitic steels. The solubility may be raised by alloying and by pressure. In both cases, the stability of retained austenite (RA) will increase and may lower the achievable hardness. To overcome this predicament, *ausforming* is applied, which consists of cold working and subsequent transformation of RA to martensite during cooling.



This article shows how to calculate the neutral axis shifting for different bending angles using advanced geometrical model and finite element simulation. The advanced geometrical model is presented to calculate the neutral axis shifting for different bending angles based on the basic geometrical model. The finite element simulation gave results close to the geometrical model results.



Very low activation enthalpy and pre-exponential factor for normal boundary migration are obtained in Fe–3% Si–MnS alloy. The atoms should be pre-activated before they jump over moving boundaries. The predominant migrations of strongly curved boundaries and triple junctions in polycrystals increase the pre-activation energy and reduce the activation enthalpy and pre-exponential factor, which differs from those in bicrystals.



The effect of temperature, atmosphere, and the elemental concentrations of boron and phosphorous in iron and CrMnNi steel on the wettability of polycrystalline α-Al_2O_3 has been studied. The contact angle of TRIP/TWIP as-cast steel on alumina substrates decreases with an increased phosphorous content. The findings are of major importance for a better infiltration efficiency of open foam ceramics.