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## Scope

*steel research international* is a journal providing a forum for the publication of high-quality manuscripts in areas ranging from process metallurgy and metal forming to materials engineering as well as modelling, process control and testing. The emphasis is on steel and related metals and on materials involved in the processing, such as refractories and slags.

## Hot Topics

- Steels for Automotive Applications
- High-strength steels
- Recent Developments in Stainless Steels
- Interstitially Alloyed Steels
- High Speed Forming
- Sustainable steelmaking

## Keywords

Process metallurgy, direct reduction, special metallurgical processes, secondary metallurgy, sustainable steelmaking, casting, near-net casting/shaping, hot rolling, cold forming, drawing, mechanical properties, phase transformation, fatigue, corrosion, heat treatment, welding/joining, machining, modelling, numerical simulation.

## Special Issues

- 250 Years TU Bergakademie Freiberg
- Best of *steel research international*  
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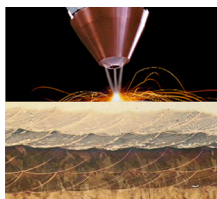
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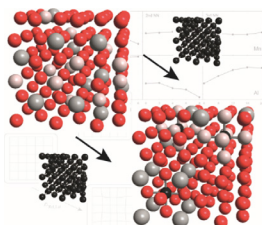


### Combinatorial Alloy Design by Laser Additive Manufacturing

FREE Helene Knoll, Sörn Ocylok, Andreas Weisheit, Hauke Springer, Eric Jäggle, Dierk Raabe

The authors use laser additive manufacturing as combinatorial method for screening new alloys. The authors synthesize tool steels, each with different chemical composition, by laser metal deposition. Reference alloys are a Cr–Mo–V tool steel and a maraging steel. The layers between them consist of blends of the two materials. The approach is an efficient high-throughput method for rapid probing of new steels.

srin.201600416

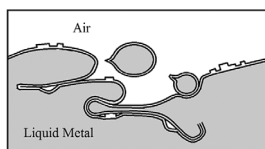


### An Ab Initio Study of Carbon-Induced Ordering in Austenitic Fe–Mn–Al–C Alloys

FREE Tobias A. Timmerscheidt, Richard Dronskowski

Short-range ordering around carbon interstitials in face-centered cubic (fcc) Fe–Mn–Al is studied by density-functional theory, considering the configuration of Fe, Mn, Al atoms in the first three coordination spheres. An improved model of short-range ordering in austenitic Fe–Mn–Al–C is proposed that allows for the prediction of energy differences between configurations where carbon is in different octahedral sites.

srin.201600292

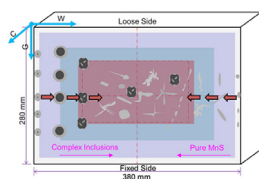


### Melting, Remelting, and Casting for Clean Steel

FREE John Campbell

The casting of steels usually involves pouring, which is now known to introduce masses of oxides. The oxides necessary entrain in the liquid in a double form, entraining air (as spherical bubbles or flat bubbles called bifilms). These features are largely unrecognized, and the bifilms not easily detected, but often control properties, particularly the failure properties including fracture and corrosion. The elimination of such defects is discussed.

srin.201600093



### Characterization of MnS Particles in Heavy Rail Steels Using Different Methods

FREE Xuewei Zhang, Lifeng Zhang, Wen Yang, Yuanchi Dong

The morphology of MnS changed from elliptical and spherical near the surface of bloom to strip-like, petal-like, polyhedral, and irregular in the center of bloom gradually. The size of both pure MnS particles and complex inclusions which consisted of a MnS outer layer and an oxide core increased from the edge to the center of bloom.

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