International Symposium on Strength of Fine Grained Materials
- 60 years of Hall-Petch-

Tuesday, July 16, 2013

Opening and Keynote Lectures

13:30 – 13:50 Opening Ceremony

13:50 – 14:50 R. W. Armstrong (Keynote Lecture)

Hall-Petch analysis: past to present nano-scale connections

14:50 – 15:10 Break

15:10 – 15:45 R. Z. Valiev (Invited)

Superior strength in bulk nanostructured metallic materials produced by SPD processing

15:45 – 16:20 G. Saada (Invited)

On the yield stress of nanograined polycrystals

16:20 – 16:55 Z. Horita (Invited)

Ultrafine-grained structures and superplasticity after processing by severe plastic deformation

16:55 – 17:00 Break

17:00 – 19:00 **Poster Session**

(Poster number) Presenters' names: Title

(P01) K. Hata: Relation between a brittle-to-ductile transition and deformation twins in polycrystalline ferritic alloys

(P02) S. J. Hwang: Yield strength of ultra fine grained α-ferrite (Fe) with Al_2O_3 Produced by mechanical alloying

(P03) S. Ii: Atomic structure and elastic strain of grain boundaries in highly deformed Al

(P04) N. Kamikawa: Hall-Petch relation in ultrafine grained Al-Mg binary alloys produced by accumulative roll bonding and annealing

(P05) Y. Kezuka: Analysis of Er segregation to the screw dislocations of alumina by STEM and first principles calculations

(P06) S. Khamsuk: Mechanical properties of bulk ultrafine grained aluminum fabricated by torsion deformation

(P07) K. Kinoshita: An improvement of pile-up models to express the unique Hall-Petch relationship of ultrafine-grained aluminum

(P08) S. Kondo: Dynamic observations of dislocation-grain boundary interaction in $SrTiO_3$ by in situ TEM nanoindentation

(P09) J. Lin: Influence of grain size and texture on the yield strength of Mg alloy processed by severe plastic deformation

(P10) T. Nagoshi: Sample size effect of electrodeposited nanocrystalline nickel

(P11) M. Nakai: The effect of microstructure on mechanical properties of forged 6061 aluminum alloy

(P12) T. Osada: Grain boundary strengthening in Ni-Co base polycrystalline superalloy

(P13) K. Sekido: Effects of alloying elements on local plasticity initiation at a grain boundary of steel

(P14) D. Setoyama: Characterization of grain size dependency with single crystal plasticity based on representative characteristic length

(P15) A. Sugawara: Tensile behavior of polycrystalline Fe and ferrous alloys

(P16) T. Sumi: Development of copper wires with fine-grained microstructure near the surface

(P17) I. Watanabe: Characterization of strength-ductility relationship with finite element analysis for polycrystalline aggregate

Wednesday, July 17, 2013

Session 1：Simulation

09:00 – 09:35 D. E. Spearot (Invited)

Molecular dynamics simulations of grain boundary structure and grain size dependent flow strength in nanocrystalline materials

09:35 – 10:10 R. H. Wagoner (Invited)

A practical meso-scale polycrystal model to predict dislocation densities, lattice curvatures, and the Hall-Petch effect

10:10 – 10:30 Y. Kogure

Simulation of mechanical deformation of nanocrystalline copper

10:30 – 10:50 T. Shimokawa

Atomic simulation of pressure dependence of intragranular and intergranular dislocation source operations

10:50 – 11:10 Break

Session 2：Hall – Petch Mechanism

11:10 – 11:45 M. Kato (Invited)

A dislocation model for deformation of ultrafine-grained crystals: effects of grain size, temperature and strain rate

11:45 – 12:05 E. N. Borodin

Abnormal Hall-Petch relation at quasistatic and dynamic loading conditions

12:05 – 12:25 S. Berbenni

On the roles of grain size dispersion and microscale Hall-Petch relation on the plastic behaviour of polycrystalline metals

12:25 – 12:45 F. Gong

Size effects of pure ion YT01 in micro massive forming

12:45 – 14:00 **Lunch**

Session 3：Bulk - Nano

14:00 – 14:35 N. Tsuji (Invited)

Peculiar Hall-Petch relationship in nanostructured metals

14:35 – 14:55 S. Gao

The yielding behavior of IF steel and its effect on the Hall-Petch relationship

14:55 – 15:15 R. G. Chembarisova

Influence of grain boundary segregation, strain rate and deformation temperature on formation of high-strength states in polycrystalline metal materials

15:15 – 15:35 **Break**

Session 4：DBTT, Surface, etc.

15:35 – 16:10 K. Higashida (Invited)

Effect of grain refinement due to severe plastic deformation on the brittle-to-ductile transition in low carbon steels

16:10 – 16:30 M. Tanaka

Enhancement of toughness at low temperatures using grain refinements

16:30 – 16:50 C. H. Cáceres

The Friction stress in the Hall-Petch relationship of Mg-Zn alloys

16:50 – 17:10 Y. Kaneko

EBSD analysis of microstructure evolution in iron subjected to sliding wear

18:00 – 20:00 **Banquet**

Thursday, July 18, 2013

Session 5：Boundary

09:00 – 09:35 Y. Ikuhara (Invited)

Grain boundary sliding and dislocation motion in oxides

09:35 – 10:10 S. Tsurekawa (Invited)

The Hall-Petch relation depending on grain boundary character distribution

10:10 – 10:30 Y. Shibutani

Defect interactions of grain boundaries observed in bicrystalline micropillars under nanoindentation

10:30 – 10:50 **Break**

Session 6：Steels

10:50 – 11:25 S. Takaki (Invited)

Effect of grain boundary segregation of interstitial elements on the Hall-Petch coefficient in steels

11:25 – 11:45 Y. Okitsu

Effect of grain size on quasi-static and dynamic strengths of ultrafine grained low-carbon steels

11:45 – 12:05 J. Toribio

Microstructure and mechanical properties in progressively drawn pearlitic steel

12:05 – 12:25 **Closing Ceremony**