

# NanoSPD3 Oral

1 st day Sept. 22 (Thur.)

Keynote	Invited	General Contribution
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Session 1 ( 8:30-10:00) Chairperson: Nobuhiro Tsuji (Japan)

Time	Ms#	Title	Authors	Country	Time
8.30-8:55	81	Some New Trends in SPD Processing for Fabrication of Bulk Nanostructured Materials	<u>R.Z. Valiev</u>	Russia	25
8:55-9.15	65	Nanocrystalline structure in steels produced by various severe plastic deformation processes	<u>M. Umemoto</u> , Y.Todaka, J.Li and K.Tsuchiya	Japan	20
9.15-9.30	124	Developing a Model for Grain Refinement in Equal-Channel Angular Pressing	Cheng Xu, Minoru Furukawa, Zenji Horita, <u>Terence G. Langdon</u>	USA	15
9.30-9.45	184	Effect of Initial Grain Size, Die Angle and Pass Sequence on the Formation of Ultrafine Grain Structure in Cu by ECAP	A. Mishra, V. Richard, F. Grégori, B. Kad, R. J.Asaro, <u>M. A. Meyers</u>	USA	15
9.45-10.00	98	Local investigations of the mechanical properties of ultrafine grained metals by nanoindentations	J. Mueller, K. Durst, D. Amberger, <u>Mathias Goken</u>	Germany	15
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1 st day Sept. 22 (Thur.)

Keynote Invited General Contribution

Session 2 (10:20-11:50) Chairperson: Terence G. Langdon (U.S.A)

Time	Ms#	Title	Authors	Country	Time
10:20-10:45	148	Nature of Deformation Behavior in Ultrafine Grained Metallic Materials	<u>Nobuhiro Tsuji</u>	Japan	25
10:45-11:05	107	THE POSITIVE ROLE OF BACK-PRESSURE IN EQUAL CHANNEL ANGULAR EXTRUSION	<u>R. Ye. Lapovok</u>	Australia	20
11:05-11:20	110	Aluminium Alloys subjected to SPD - An Evaluation of Achieved Mechanical Properties	<u>Hans J. Roven</u> , Hakon A. Nesboe, Hakon E. Sandberg, Jens C. Werenskiold	Norway	15
11:20-11:35	109	On the Grain Refinement Mechanisms in SPD – Applying High Resolution Electron Microscopy and the LEDS Approach	<u>Jens C. Werenskiold</u> , Hans J. Roven	Norway	15
11:35-11:50	135	On the microstructure of HPT processed Cu under variation of deformation parameters	<u>E. Schafler</u> , A. Dubravina, B. Mingler, H.P. Karnthaler, M. Zehetbauer	Austria	15
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1 st day Sept. 22 (Thur.)

Keynote Invited General Contribution

Session 3 (13:30-15:00) Chairperson: Ruslan Z. Valiev (Russia)

Time	Ms#	Title	Authors	Country	Time
13.30-13.55	136	Deformation Induced Vacancies with Severe Plastic Deformation: Measurements and Modelling	<u>M. J. Zehetbauer</u> , G. Steiner, E. Schafner, A. Korznikov, E. Korznikova	Austria	25
13.55-14.15	103	INFLUENCE OF PROCESSING PARAMETERS ON TEXTURE AND MICROSTRUCTURE IN ALUMINUM AFTER ECAP	<u>A. P. Zhilyaev</u> , K. Oh-ishi, G. I. Raab, T. R. McNelley	USA	20
14.15-14.30	147	Processing of Ultrafine-grained Cu-Fe-Cr Composite by Equal Channel Angular Pressing	K. H. Joo, K. I. Chang, H.S. Kim, <u>S.I. Hong</u>	South Korea	15
14.30-14.45	123	Creep and Mechanical Properties of a Commercial Aluminum Alloy Processed by ECAP	<u>Cheng Xu</u> , Terence G. Langdon	USA	15
14.45-15.00	20	An Investigation of Cavitation in the Tensile Testing of a Spray-Cast Aluminum Alloy Processed by ECAP	<u>Megumi Kawasaki</u> , Cheng Xu, Terence G. Langdon	USA	15
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15:20-17:30 Poster Session A (*odd Ms numbers*, see list of poster presentation)

2nd day Sept. 23 (Fri.)

Keynote Invited General Contribution

Session 4 ( 8:30-10:00) Chairperson: Michael J. Zehetbauer (Austria)

Time	Ms#	Title	Authors	Country	Time
8.30-8.55	142	Effects of Severe Plastic Deformation: Mechanical Properties and Beyond	<u>Y. Estrin</u>	Germany	25
8.55-9.15	8	Texture formation during ECAP of aluminum alloy AA 5109	<u>W. Skrotzki</u> , N. Scheerbaum, C.-G. Oertel, H.-G. Brokmeier, S. Suwas, L.S. Tóth	Germany	20
9.15-9.30	129	Influence of Cu on the mechanical properties of an Al-4.4wt%Mg alloy after ECAP	<u>Bert Verlinden</u> , Miljana Popovic	Belgium	15
9.30-9.45	9	An Investigation of Deformation in Copper Single Crystals using Equal-Channel Angular Pressing	<u>Minoru Furukawa</u> , Yukihide Fukuda, Keiichiro Oh-ishi, Zenji Horita, Terence G. Langdon	Japan	15
9.45-10.00	119	Superplastic Deformation of Ultrafine Grained Al Alloy Processed by ECAP and Post-Rolling	<u>Kyung Tae Park</u> , Chong Soo Lee, Yong Suk Kim, Dong Hyuk Shin	Korea	15
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2nd day Sept. 23 (Fri.)

Keynote Invited General Contribution

Session 5 (10:20-12:10) Chairperson: Yuri Estrin (Germany)

Time	Ms#	Title	Authors	Country	Time
10.20-10.45	139	Deformation Twins Formed in Nanocrystalline Materials	<u>Yuntian T. Zhu</u>	USA	25
10.45-11.05	178	Subgrain Size-Distributions, Dislocation Structures, Stacking- and Twin Faults and Vacancy Concentrations in SPD Materials Determined by X-ray Line Profile Analysis	<u>T. Ungár</u>	Hungary	20
11.05-11.25	161	Grain boundary diffusion-controlled processes and properties of bulk nanostructured alloys and steels	<u>Yu. Kolobov</u> , K.V. Ivanov	Russia	20
11.25-11.40	91	New Mg-Zn-Y Alloys Strengthened by Plastic Deformation	<u>Yoshihito Kawamura</u> , Shintaro Yoshimoto, Michiaki Yamasaki	Japan	15
11.40-11.55	18	Microstructure and Thermal Stability of Ultra Fine Grained Mg-based Alloys Prepared by High Pressure Torsion	<u>J. Čížek</u> , I. Procházka, B. Smola, I. Stulíková, R. Kužel, Z. Matěj, V. Cherkaska, R.K. Islamgaliev, O. Kulyasova	Czech Republic	15
11.55-12.10	113	Fracture toughness in ultra fine-grained magnesium alloy	<u>Hidetoshi Somekawa</u> , Toshiji Mukai	Japan	15
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Keynote Invited General Contribution

Session 6 (13:30-14:55) Chairperson: Yutian T. Zhu (USA)

Time	Ms#	Title	Authors	Country	Time
13.30-13.50	102	Enhancement of Ductility and Strength through Microstructural Refinement by FSP of Nickel Aluminum Bronze	K. Oh-ishi, A. P. Zhilyaev, <u>T. R. McNelley</u>	USA	20
13.50-14.10	69	Microstructural Evolution During Friction Stir Welding of Ultrafine Grained Al Alloys	<u>Y.S. Sato</u> , M. Urata, Y. Kurihara, S.H.C. Park, H. Kokawa, K. Ikeda, N. Tsuji	Japan	20
14.10-14.25	3	Crystal restoration during severe plastic deformation	<u>Hein Peter Stuwe</u>	Austria	15
14.25-14.40	2	Channel configuration effects in 3D-ECAP	<u>Andrzej Rosochowski</u> , Lech Olejnik, Maria Richert	United Kingdom	15
14.40-14.55	61	Large Straining Behavior and Microstructure Refinement of Several Metals by Torsion Extrusion Process	<u>Susumu Mizunuma</u>	Japan	15
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15:20-17:30 Poster Session B (*even Ms numbers*, see list of poster presentation)

3rd day Sept. 24 (Sat.)

Keynote	Invited	General Contribution
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Session 7 ( 8:30-10:05) Chairperson: Hyoung Seop Kim (Korea)

Time	Ms#	Title	Authors	Country	Time
8.30-8.55	158	Size Effects in Plasticity: Experiments and Simulations	<u>Helena Van Swygenhoven</u>	Switzerland	25
8.55-9.15	174	Atomistic Study on Deformation of Nanocrystalline Metals and Nanometer-Scale Specimens	<u>Akihiro Nakatani</u>	Japan	20
9.15-9.35	7	Simulation of Equal-Channel Angular Extrusion Pressing	<u>I.V. Alexandrov</u> , I.N. Budilov, G. Krallics, H.S. Kim, S.C. Yoon, A.A. Smolyakov, A.I. Korshunov, V.P. Solovyev	Russia	20
9.35-9.50	4	Deformation Mechanism of Nanocrystalline Al-Fe Alloys by Analysis from Ab-Initio Calculations	Tokuteru UESUGI, Yorinobu TAKIGAWA, <u>Kenji Higashi</u>	Japan	15
9.50-10.05	181	Modeling and Simulation of Crystal Plasticity Based on GN Crystal Defects for Ultrafine-Grained Metals Induced by Severe Plastic Deformation	Shingo Oishi, Yoshiteru Aoyagi and <u>Kazuyuki Shizawa</u>	Japan	15
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3rd day Sept. 24 (Sat.)

Keynote Invited General Contribution

Session 8 (10:25-12:05) Chairperson: Helena van Swygenhoven (Switzerland)

Time	Ms#	Title	Authors	Country	Time
10.25-10.45	156	Severe plastic deformation (SPD) processing of metallic powders for bulk nanostructured materials	<u>Hyoung Seop Kim</u>	Korea	20
10.45-11.05	67	Microstructure and Mechanical Property of Nano-Duplex Materials Produced by HRS Process	Hiroshi Fujiwara, Ryota Akada, Yuki Yoshita, <u>Kei Ameyama</u>	Japan	20
11.05-11.20	32	Synthesis of Bulk Materials by Equal Channel Angular Consolidation of Particles	X. Wu, <u>K. Xia</u>	Australia	15
11.20-11.35	114	Indentation-induced deformation behavior in martensitic steel observed through in-situ nanoindentation in a transmission electron microscopy	<u>T. Ohmura</u> , A. Minor, K. Tsuzaki, J.W. Morris, Jr.	Japan	15
11.35-11.50	6	Inhomogeneity of microstructure and creep of ECAP Aluminium	<u>V. Sklenicka</u> , P. Kral, L. Ilucova, I. Saxl, J. Dvorak, M. Svoboda	Czech Republic	15
11.50-12.05	187	Spatial uniformity of the rate of grain coarsening in a submicron Al-Sc alloy produced by severe plastic deformation	<u>M. Ferry</u>	Australia	15
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4th day Sept. 25 (Sun.)

Keynote Invited General Contribution

Session 9 ( 8:30-10:00) Chairperson: Terry R. McNelley (USA)

Time	Ms#	Title	Authors	Country	Time
8.30-8.55	131	Mechanical properties of ultrafine grained metals under cyclic and monotonic loads: An Overview	<u>H. W. Höppel</u>	Germany	25
8.55-9.15	77	Monotonic and Cyclic Behavior of Ultrafine Grain Metals: Overview	<u>A. Vinogradov</u>	Japan	20
9.15-9.30	159	Evolution of microstructure and precipitation in heat-treatable aluminium alloys during ECA pressing and subsequent heat treatment	<u>Nong Gao</u> , Marco J. Starink, Minoru Furukawa, Zenji Horita, Cheng Xu, Terence G. Langdon	United Kingdom	15
9.30-9.45	75	Effect of the Temperature of Accumulative Roll Bonding on the Microstructure and Properties of Twin-Roll Cast AA8006 Alloy	P. Homola, <u>M. Slámová</u> , M. Karlík, J. Čížek, I. Procházka	Czech Republic	15
9.45-10.00	41	Microstructure and Mechanical Properties Resulting from Conventional Cold Extrusion of Equal Channel Angular Extruded Aluminium Alloy AA6101	D. Nagarajan, <u>Uday Chakkingal</u> , P. Venugopal	India	15
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4th day Sept. 25 (Sun.)

Keynote Invited General Contribution

Session 10 (10:20-12:10) Chairperson: Heinz W. Höppel (Germany)

Time	Ms#	Title	Authors	Country	Time
10.20-10.40	17	Effect of Second Phase Particles on Ultra-Fine Grain Evolution during Multi-Directional Forging of Austenitic Stainless Steel	H. Miura, H. Hamaji, <u>T. Sakai</u> , N. Fujita, N. Yoshinaga	Japan	20
10.40-10.55	95	Magnetic properties and microstructure of a FeCo ferritic steel after severe plastic deformation	<u>A. Vorhauer</u> , K. Rumpf, P. Granitzer, S. Kleber, H. Krenn, R. Pippan	Austria	15
10.55-11.10	57	Deformation Microstructures in A Two-Phase Stainless Steel during Large Strain Deformation	<u>K. Tsuzaki</u> , A. Belyakov, Y. Kimura	Japan	15
11.10-11.25	96	Ultra Grain Refinement Of Low C Steels By Accumulative Roll Bonding	<u>I. Salvatori</u>	Italy	15
11.25-11.40	45	Deformation Behavior of Ultrafine Grained Iron	<u>S. Takaki</u> , K. Kawasaki, Y. Futamura, T. Tsuchiyama	Japan	15
11.40-11.55	56	On Structural Mechanism of Continuous Recrystallization in Ferritic Stainless Steel after Large Strain Processing	<u>A. Belyakov</u> , Y. Kimura, K. Tsuzaki	Japan	15
11.55-12.10	71	High Z - Large Strain Deformation Processing and its Applications	<u>Shiro Torizuka</u> , Akio OHMORI, S.V.S. Narayana MURTY, Kotobu NAGAI	Japan	15
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4th day Sept. 25 (Sun.)

Keynote Invited General Contribution

Session 11 (13:30-14:55) Chairperson: Kaneaki Tsuzaki (Japan)

Time	Ms#	Title	Authors	Country	Time
13.30-13.50	38	Application of Twist Extrusion	<u>Viktor Varyukhin</u> , Yan Beygelzimer, Sergey Synkov, Dmitry Orlov	Ukraine	20
13.50-14.10	94	Hydrostatic Extrusion as a Method of Grain Refinement in Metallic Materials	<u>Krzysztof J. Kurzydowski</u>	Poland	20
14.10-14.25	39	Mechanics of Twist Extrusion	Y. Beygelzimer, <u>D. Orlov</u> , O. Prokof'eva, A. Reshetov, S. Synkov, A. Synkov	Ukraine	15
14.25-14.40	122	Recrystallized grain size in severely deformed pure copper	<u>S.J. Kadri</u> , K.T. Hartwig	USA	15
14.40-14.55	128	A transmission electron microscopy study of the role of Sc+Zr addition to a 6082-T8 alloy subjected to equal channel angular pressing	M. Cabibbo, E. Evangelista, <u>C. Scalabroni</u> , E. Bonetti,	Italy	15
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4th day Sept. 25 (Sun.)

Keynote Invited General Contribution

Session 12 (15:15-17:05) Chairperson: Dong Hyuk Shin (Korea)

Time	Ms#	Title	Authors	Country	Time
15.15-15.40	155	Outlook for Manufacturing Materials by Severe Plastic Deformation	<u>Terry C. Lowe</u>	USA	25
15.40-16.00	59	Historic Retrospection and Present status of Severe Plastic Deformation in China	<u>Jing Tao Wang</u>	China	20
16.00-16.20	183	Scaling up of Equal Channel Angular Pressing (ECAP) for the Production of Forging Stock	<u>R. Srinivasan, B. Cherukuri, P.K. Chaudhury</u>	USA	20
16.20-16.35	19	Micro- and Nano- Mechanics of Very Large Strain Deformation by Machining	<u>Michael Sevier</u> , Seongyl Lee, M. Ravi Shankar, Henry T.Y. Yang, <u>Srinivasan Chandrasekar</u> , W. Dale Compton	USA	15
16.35-16.50	154	Continuous Grain Refinement Using Severe Torsion Straining Process	<u>Katsuaki Nakamura</u> , Koji Neishi, Kenji Kaneko, Michihiko Nakagaki, Zenji Horita	Japan	15
16.50-17.05	182	Application of High Pressure Torsion to Bulk Samples	Genki Sakai, Katsuaki Nakamura, <u>Zenji Horita</u> , Terence G. Langdon	Japan	15
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**The sessions on 26th Sept. are co-organized by the society for the study of  
"Materials Science of Ultrahigh Plastic Strain"  
in Iron and Steel Institute of Japan (ISIJ)**

**5th day Sept. 26 (Mon.)**

**Keynote** **Invited** **General Contribution**

**Session 13 ( 8:30-10:00) Chairperson: Minoru Umemoto (Japan)**

Time	Ms#	Title	Authors	Country	Time
8.30-8.55	167	Specific Features of the Strengthening During Severe Plastic Deformation of Supersaturated Solid Solutions	<u>S.V.Dobatkin</u> , V.V.Zakharov, L.L.Rokhlin	Russia	25
8.55-9.15	171	Differences in structural evolution in single- and dual-phase materials during Severe Plastic Deformation	<u>R. Pippan</u> , A. Vorhauer, F. Wetscher, M. Faleschini, M. Hafok, I. Sabirov	Austria	20
9.15-9.30	153	Formation of supersaturated solid solutions in Al alloys with transition metals upon shear under pressure	<u>I.G. Brodova</u> , D.V. Bashlykov, I.G. Shirinkina, I.P. Lennikova	Russia	15
9.30-9.45	97	Martensitic Transformation and Mechanical Behavior of TiNi Shape Memory Alloys after Severe Plastic Deformation	<u>K. Tsuchiya</u> , M. Inuzuka, A. Hosokawa, D. Tomus, H. Nakayama, K. Morii, Y. Todaka, M. Umemoto	Japan	15
9.45-10.00	106	Deformation Twinning and Texture Evolution of Severely Deformed Ti-6Al-4V Alloy	G. G. Yapici, <u>I. Karaman</u>	USA	15
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5th day Sept. 26 (Mon)

Keynote Invited General Contribution

Session 14 (10:20-12:05) Chairperson: Sergey V. Dobatkin (Russia)

Time	Ms#	Title	Authors	Country	Time
10.20-10.45	68	3DAP/TEM characterization of severely deformed two phase metallic nanostructures	<u>K. Hono</u>	Japan	25
10.45-11.05	163	New Routes for Synthesizing Massive Nanocrystalline Materials	<u>Gerhard Wilde</u> , N. Boucharat, G.P. Dinda, H. Rösner, R.Z. Valiev	Germany	20
11.05-11.20	194	Microstructural Development during Severe Plastic Deformation in Fe-C Alloy Powders with Different Initial Microstructure	<u>Hideyuki Hidaka</u> , Toshihiro Tsuchiyama and Setsuo Takaki	Japan	15
11.20-11.35	44	3D-Atom Probe investigation of vacancy induced interdiffusion during High Pressure Torsion deformation.	<u>X. Sauvage</u>	France	15
11.35-11.50	85	A new deformation mechanism in nanoscale Fe-C composite as a result of a stress-induced $\alpha \rightarrow \gamma$ transformation	<u>Yu. Ivanisenko</u> , I. MacLaren, R.Z. Valiev, H.-J. Fecht	Germany	15
11.50-12.05	63	3DAP/TEM characterization of mechanically milled nanocrystalline Fe-C	<u>S. Ohsaki</u> , K. Hono, H. Hidaka, S. Takaki	Japan	15
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5th day Sept. 26 (Mon.)

Keynote	Invited	General Contribution
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Session 15 (13:30-15:15) Chairperson: Kazuhiro Hono (Japan)

Time	Ms#	Title	Authors	Country	Time
13.30-13.55	164	Ultrafine grained dual phase steels fabricated by equal channel angular pressing	<u>Dong Hyuk Shin</u> , Woo Gyeom Kim, Jung Yong Ahn, Kyung-Tae Park, Yong Suk Kim	Korea	25
13.55-14.15	188	Dissolving equilibrium-immiscible elements during severe plastic deformation	<u>E. Ma</u>	U.S.A	20
14.15-14.30	191	Structure analysis of heavily deformed pearlitic steel with synchrotron radiation	<u>Akira Taniyama</u> , Toru Takayama, Masahiro Arai, Takanari Hamada	Japan	15
14.30-14.45	87	High Pressure Torsion of Rail Steels	<u>F. Wetscher</u> , B. Tian, R. Stock, R.Pippan	Austria	15
14.45-15.00	29	Microstructural Investigation of White Etching Layer on Pearlite Railway Steel	<u>H. W. Zhang</u> , S. Ohsaki, S. Mitao, K. Hono	Japan	15
15.00-15.15	177	Dissolution of Cementite in Carbon Steels by Heavy Deformation and Laser Heat Treatment	Minoru Umemoto, <u>Yoshikazu Todaka</u> , Akifumi Ohno, Mayumi Suzuki, Koichi Tsuchiya	Japan	15
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Session 16 (General discussion ) 15:30-17:30