
References

- Agnew**, S., Mehrotra, P., Lillo, T., Stoica, G. and Liaw, P. (2005). Crystallographic texture evolution of three wrought magnesium alloys during equal channel angular extrusion. *Materials Science and Engineering: A*, 408(1), 72-78.
- Alexander**, D. J. and Beyerlein, I. J. (2005). Anisotropy in mechanical properties of high-purity copper processed by equal channel angular extrusion. *Materials Science and Engineering: A*, 410, 480-484.
- Antolovich**, S. D., & Armstrong, R. W. (2014). Plastic strain localization in metals: origins and consequences. *Progress in Materials Science*, 59, 1-160.
- Antonione**, C., Della Gatta, G., Riontino, G., & Venturello, G. (1973). Grain growth and secondary recrystallisation in iron. *Journal of Materials Science*, 8(1), 1-10.
- Azizi-Alizamini**, H., Militzer, M., & Poole, W. J. (2007). A novel technique for developing bimodal grain size distributions in low carbon steels. *Scripta Materialia*, 57(12), 1065-1068
- Azushima**, A., Kopp, R., Korhonen, A., Yang, D., Micari, F., Lahoti, G., Rosochowski, A. (2008). Severe plastic deformation (SPD) processes for metals. *CIRP Annals-Manufacturing Technology*, 57(2), 716-735
- Bakkaloğlu**, A. (2002). Effect of processing parameters on the microstructure and properties of an Nb microalloyed steel. *Materials Letters*, 56(3), 263-272.
- Barber**, R., Dudo, T., Yasskin, P. and Hartwig, K. (2004). Product yield for ECAE processing. *Scripta Materialia*, 51(5), 373-377.
- Basavaraj**, V. P., Chakkingal, U. and Kumar, T. P. (2009). Study of channel angle influence on material flow and strain inhomogeneity in equal channel angular pressing using 3D finite element simulation. *Journal of Materials Processing Technology*, 209(1), 89-95.
- Berbenni**, S., Favier, V., & Berveiller, M. (2007). Impact of the grain size distribution on the yield stress of heterogeneous materials. *International Journal of Plasticity*, 23(1), 114-142.
- Berbon**, P. B., Furukawa, M., Horita, Z., Nemoto, M., & Langdon, T. G. (1999). Influence of pressing speed on microstructural development in equal-channel angular pressing. *Metallurgical and Materials Transactions A*, 30(8), 1989-1997.
- Beyerlein**, I. J., Lebensohn, R. A., & Tome, C. N. (2003). Modeling texture and microstructural evolution in the equal channel angular extrusion process. *Materials Science and Engineering: A*, 345(1), 122-138.

Beyerlein, I. J., Li, S., Necker, C. T., Alexander, D. J., and Tomé, C. N. (2005). Non-uniform microstructure and texture evolution during equal channel angular extrusion. *Philosophical Magazine*, 85, 1359–1394.

Beyerlein, I. J., and Tóth, L. S. (2009). Texture evolution in equal-channel angular extrusion,. *Progress in Material Science*, 54, 427–510.

Beygelzimer, Y., Varyukhin, V., Synkov, S., Sapronov, A. and Synkov, V. (1999). New schemes of large plastic deformations accumulating with using of hydroextrusion. *Phys. Technol. High Press*, 9(3), 109-111.

Beygelzimer, Y.Y., Varyukhin, V.N., Synkov, V.G., Synkov, S.G. (2000). Severe plastic deformation of the materials under twist hydro extrusion. *Phys Technol High Press*; 10:24.

Beygelzimer, Y. and Orlov, D. (2002). Metal plasticity during the Twist Extrusion. Paper presented at the Defect and Diffusion Forum.

Beygelzimer, Y., Orlov, D., Korshunov, A., Synkov, S., Varyukhin, V., Vedernikova, I., Korotchenkova, I. (2006). Features of twist extrusion: method, structures and material properties. Paper presented at the Solid State Phenomena.

Beygelzimer, Y., Toth, L.S., Joans, J.J. (2015). Some physical characteristics of strain hardening in severe plastic deformation. *Advanced Engineering Materials*. 17(12), 1783-1791.

Bhowmik, A., Biswas, S., Suwas, S., Ray, R. K., & Bhattacharjee, D. (2009). Evolution of grain-boundary microstructure and texture in interstitial-free steel processed by equal-channel angular extrusion. *Metallurgical and Materials Transactions A*, 40(11), 2729.

Bolmaro, R. E., & Kocks, U. F. (1992). A comparison of the texture development in pure and simple shear and during path changes. *Scripta Metallurgica et Materialia*, 27(12), 1717-1722.

Borbély, A., Driver, J. H., & Ungár, T. (2000). An X-ray method for the determination of stored energies in texture components of deformed metals; application to cold worked ultra high purity iron. *Acta Materialia*, 48(8), 2005-2016.

Borchersa, C., Al-Kassaba, T., Gotoa, S., and Kirchheim, R. (2009). Partially amorphous nanocomposite obtained from heavily deformed pearlitic steel. *Materials Science and Engineering A*, 502, 131–138.

Bowen, J. R., Ghosh, A., Roberts, S. and Prangnell, P. (2000). Analysis of the billet deformation behaviour in equal channel angular extrusion. *Materials Science and Engineering: A*, 287(1), 87-99.

Bridgman, P. (1943). On torsion combined with compression. *Journal of Applied Physics*, 14(6), 273-283.

Cardoso, K., Travessa, D., Botta, W. and Jorge, A. (2011). High Strength AA7050 Al alloy processed by ECAP: Microstructure and mechanical properties. *Materials Science and Engineering: A*, 528(18), 5804-5811.

- Chang**, C., Sun, P. and Kao, P. (2000). Deformation induced grain boundaries in commercially pure aluminium. *Acta Materialia*, 48(13), 3377-3385.
- Chen**, X. H., & Lu, L. (2007). Work hardening of ultrafine-grained copper with nanoscale twins. *Scripta Materialia*, 57(2), 133-136.
- De Barros Costa**, L. G., Moreira, L. P. and De Medeiros, N. (2013). Evaluation Of The Backpressure Effect On The Plastic Strain Homogeneity During The Deformation of The Al 6070 Alloy via ECAP Technique.
- Djavanroodi**, F. and Ebrahimi, M. (2010). Effect of die channel angle, friction and back pressure in the equal channel angular pressing using 3D finite element simulation. *Materials Science and Engineering: A*, 527(4), 1230-1235.
- Djavanroodi**, F., Omranpour, B., Ebrahimi, M. and Sedighi, M. (2012). Designing of ECAP parameters based on strain distribution uniformity. *Progress in Natural Science: Materials International*, 22(5), 452-460.
- Doherty**, R. D., Hughes, D. A., Humphreys, F. J., Jonas, J. J., Jensen, D. J., Kassner, M. E., Rollett, A. D. (1997). Current issues in recrystallisation: a review. *Materials Science and Engineering: A*, 238(2), 219-274
- Edalati**, K., & Horita, Z. (2010). Continuous high-pressure torsion. *Journal of Materials Science*, 45(17), 4578-4582.
- Eizadjou**, M., Danesh Manesh, H., Janghorban, K.J. (2009). Microstructure and mechanical properties of ultra-fine grains (UFGs) aluminum strips produced by ARB process . *Alloys Compound*. 474,406 – 415.
- Engler**, O., & Randle, V. (2009). Introduction to texture analysis: Macrotecture, Microtexture, and Orientation Mapping. CRC press, 24-35.
- Estrin**, Y., & Vinogradov, A. (2013). Extreme grain refinement by severe plastic deformation: a wealth of challenging science. *Acta Materialia*, 61(3), 782-817.
- Ferrasse**, S., Segal, V.M., Kalidindi, S.R., and Alford, F. (2004). Texture evolution during equal channel angular extrusion Part I. Effect of route, number of passes and initial texture, *Material Science and Engineering A*, 368, 28–40.
- Fukuda**, Y., Oh-Ishi, K., Horita, Z., & Langdon, T. G. (2002). Processing of a low-carbon steel by equal-channel angular pressing. *Acta Materialia*, 50(6), 1359-1368.
- Furukawa**, M., Iwahashi, Y., Horita, Z., Nemoto, M. and Langdon, T. G. (1998). The shearing characteristics associated with equal-channel angular pressing. *Materials Science and Engineering: A*, 257(2), 328-332.
- Furukawa**, M., Horita, Z., Nemoto, M., & Langdon, T. G. (2002). The use of severe plastic deformation for microstructural control. *Materials Science and Engineering: A*, 324(1), 82-89.
- Furuno**, K., Akamatsu, H., Oh-ishi, K., Furukawa, M., Horita, Z. and Langdon, T. G. (2004). Microstructural development in equal-channel angular pressing using a 60 die. *Acta Materialia*, 52(9), 2497-2507.

Gabriel, B. L. (1998). Scanning Electron Microscopy, ASM Handbook, vol. 12, 173–175.

Galan Lopez, J., Samek, L., Verleysen, P., Verbeken, K., & Houbaert, Y. (2012). Advanced high strength steels for automotive industry. *Revista de metalurgia*, 48(2), 118-131.

Galeyev, R.M., Valiakhmetov, O.R., Salishchev, G.A. (1990). Dynamic recrystallisation of Coarse Grained Titanium Base VT8 Alloy in (a+ b) Field. *Russ Metall*, 4, 97-103.

Gavriljuk, V. G. (2003). Decomposition of cementite in pearlitic steel due to plastic deformation. *Materials Science and Engineering: A*, 345(1), 81-89.

Gazder, A. A., Torre, F. D., Gu, C. F., Davies, C. H. J., and Pereloma, E. V. (2006). Microstructure and texture evolution of bcc and fcc metals subjected to equal channel angular extrusion. *Material Science and Engineering A*, 415, 126–139.

Gazder, A. A., Cao, W., Davies, C. H., & Pereloma, E. V. (2008). An EBSD investigation of interstitial-free steel subjected to equal channel angular extrusion. *Materials Science and Engineering: A*, 497(1), 341-352.

Geist, D., Rentenberger, C. and Karnthaler, H. (2011). Extreme structural inhomogeneities in high-pressure torsion samples along the axial direction. *Acta Materialia*, 59(11), 4578-4586.

Gholinia, A., Prangnell, P. B., and Markushev, M. V. (2000). The effect of strain path on the development of deformation structures in severely deformed aluminium alloys processed by ECAE, *Acta Materialia*, 48, 1115-1130.

Gopi, B., Naga Krishna, N., Sivaprasad, K., & Venkateswarlu, K. (2012). Effect of Rolling Temperature on Microstructure and Mechanical Properties of Cryorolled Al-Mg-Si Alloy Reinforced with 3wt% TiB₂ In Situ Composite. In *Advanced Materials Research* (Vol. 584, pp. 556-560). Trans Tech Publications.

Gzyl, M., Rosochowski, A., Boczkal, S., Olejnik, L., Katimon, M. N. (2016). Producing high-strength metals by I-ECAP. *Advanced Engineering Materials*. 18(2), 219-223.

Haldar, A., Suwas, S., & Bhattacharjee, D. (Eds.). (2009). *Microstructure and Texture in Steels: and Other Materials*. Springer Science & Business Media.

Hall, E. O. (1951). The deformation and ageing of mild steel: III discussion of results. *Proceedings of the Physical Society. Section B*, 64(9), 747.

Han, J. H., Seok, H. K., Chung, Y. H., Shin, M. C., & Lee, J. C. (2002). Texture evolution of the strip cast 1050 Al alloy processed by continuous confined strip shearing and its formability evaluation. *Materials Science and Engineering: A*, 323(1), 342-347.

Handbook, A. S. M. Volume 1 Properties and Selection: Irons, steels and high performance alloys, 1990, ASM International, The Materials Information Company, United States of America. 1, 1303-1408).

- Hansen**, N., Huang, X. and Kamikawa, N. (2009). Structure and Strength of IF Steel After Large Strain Deformation Microstructure and Texture in Steels. Springer. 33-42.
- Hansen**, N., Huang, X., & Winther, G. (2008). Grain orientation, deformation microstructure and flow stress. Materials Science and Engineering: A, 494(1), 61-67.
- Hansen**, N. (2001). Microstructural evolution during forming of metals. Journal of Materials Science and Technology.17(4), 409-412.
- Hasegawa**, M., & Fukutomi, H. (2002). Microstructural study on dynamic recrystallisation and texture formation in pure nickel. Materials Transactions, 43(5), 1183-1190.
- Hatherly**, M. (1990). The origin of recrystallisation textures. Recrystallisation, 59-68.
- Hatherly**, M., Hutchinson, W. B. (1979). An introduction to textures in metals. Institution of Metallurgists.
- Hazra**, S. S., Gazder, A. A., Carman, A., & Pereloma, E. V. (2011). Effect of cold rolling on as-ECAP interstitial free steel. Metallurgical and Materials Transactions A, 42(5), 1334-1348.
- Hazra**, S.S., Gazder, A.A., and Pereloma, E.V. (2009). Stored energy of a severely deformed interstitial free steel. Materials Science and Engineering A, 524, 158–167.
- Hebesberger**, T., Stüwe, H. P., Vorhauer, A., Wetscher, F., & Pippan, R. (2005). Structure of Cu deformed by high pressure torsion. Acta Materialia, 53(2), 393-402.
- He**, P. (2013). On the structure-property correlation and the evolution of Nanofeatures in 12-13.5% Cr oxide dispersion strengthened ferritic steels (vol. 31). KIT Scientific Publishing.
- Hertzberg**, R. W. (1989). Deformation and fracture mechanics of engineering materials. third ed., John Wiley & Sons Inc., Singapore, 253–257.
- Hodowany**, J., Ravichandran, G., Rosakis, A. J., & Rosakis, P. (2000). Partition of plastic work into heat and stored energy in metals. Experimental Mechanics, 40(2), 113-123.
- Hölscher**, M., Raabe, D., & Lücke, K. (1994). Relationship between rolling textures and shear textures in fcc and bcc metals. Acta Metallurgica Materialia, 42(3), 879-886.
- Hono**, K., Ohnuma, M., Murayama, M., Nishida, S., Yoshie, A., & Takahashi, T. (2001). Cementite decomposition in heavily drawn pearlite steel wire. Scripta Materialia, 44(6), 977-983.
- Horita**, Z. and Langdon, T. G. (2005). Microstructures and microhardness of an aluminum alloy and pure copper after processing by high-pressure torsion. Materials Science and Engineering: A, 410, 422-425.
- Houtte**, P. V. (2009). Manuals MTM-FHM, Department of metallurgy and Materials Engineering, Leuven.

Hosseini, S.M., Alishahi, M., Najafizadeh, A., and Kermanpur, A. (2012). The improvement of ductility in nano/ultrafine grained low carbon steels via high temperature short time annealing Materials Letters, 74, 206–208.

Huang, J. Y., Zhu, Y. T., Jiang, H., & Lowe, T. C. (2001). Microstructures and dislocation configurations in nanostructured Cu processed by repetitive corrugation and straightening. *Acta Materialia*, 49(9), 1497-1505.

Huang, X., Kamikawa, N., and Hansen, N. (2010). Strengthening mechanisms and optimization of structure and properties in a nanostructured IF steel. *Journal Material Science*, 45, 4761–4769.

Hughes, D. (2001). Microstructure evolution, slip patterns and flow stress. *Materials Science and Engineering: A*, 319, 46-54.

Hu, H. (1974). Texture of metals. Gordon and Breach Science Publishers Ltd. 1, 233-258.

Humphreys, F. J., & Ardakani, M. G. (1994). The deformation of particle-containing aluminium single crystals. *Acta metallurgica et Materialia*, 42(3), 749-761.

Humphreys, F.J., and Hatherly. M., (1995). Recrystallisation and Related Annealing Phenomena, 1st ed., Pergamon, New York, NY, 369–78.

Hutchinson, B. (1999). Deformation microstructures and textures in steels. *Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences*, 357(1756), 1471-1485.

Hwang, S. K., Baek, H. M., Joo, H. S. and Im, Y.-T. (2015). Effect of processing routes in a multi-pass continuous hybrid process on mechanical properties, microstructure and texture evolutions of low-carbon steel wires. *Metals and Materials International*, 21(2), 391-401.

Hwang, S. K., Baek, H. M., Son, I. H., Im, Y. T., & Bae, C. M. (2011). The effect of microstructure and texture evolution on mechanical properties of low-carbon steel processed by the continuous hybrid process. *Materials Science and Engineering: A*, 579, 118-125.

Inagaki, H. (1994). Fundamental aspect of texture formation in low carbon steel. *ISIJ international*, 34(4), 313-321.

Isaenkova, M., Perlovich, Y., Fesenko, V., Grekhov, M., Alexandrov, I., and Beyerlein, I. J. (2005). Formation of inhomogeneous texture and structure in metal materials under equal-channel angular pressing. *Mater Science Forum (ICOTOM-14)* 495–497, 827–732.

Ivanisenko, Y., Lojkowski, W., Valiev, R. Z., & Fecht, H. J. (2003). The mechanism of formation of nanostructure and dissolution of cementite in a pearlitic steel during high pressure torsion. *Acta Materialia*, 51(18), 5555-5570.

Ivanisenko, Y.V., Valiev, R.Z., Lojkowski, W., Grob, A., and Fecht, H.-J. (2002). in Ultrafine-Grained Materials II, Zhu, Y.T., Langdon, T.G., Mishra, R.S., Semiatin, S.L., Saran, M.J., and Lowe, T.S. eds., Nanostructure formation and carbide dissolution in rail steel deformed by high pressure torsion. TMS, Seattle, WA, 47-54.

Iwahashi, Y., Wang, J., Horita, Z., Nemoto, M., & Langdon, T. G. (1996). Principle of equal-channel angular pressing for the processing of ultra-fine grained materials. *Scripta Materialia*, 35(2), 143-146.

Jamaati, R., Toroghinejad, M. R., Amirkhanlou, S. and Edris, H. (2015). On the Achievement of Nanostructured Interstitial Free Steel by Four-Layer Accumulative Roll Bonding Process at Room Temperature. *Metallurgical and Materials Transactions A*, 46(9), 4013-4019.

Janeček, M., Krajnák, T., Stráská, J., Čížek, J., Lee, D., Kim, H. and Gubicza, J. (2014). Microstructure evolution in ultrafine-grained interstitial free steel processed by high pressure torsion. Paper presented at the IOP Conference Series: Materials Science and Engineering.

Jazaeri, H., & Humphreys, F. J. (2004). The transition from discontinuous to continuous recrystallisation in some aluminium alloys: II-annealing behaviour. *Acta Materialia*, 52(11), 3251-3262.

Jazaeri, H., Humphreys, J. F., & Bate, P. S. (2006). Static and dynamic grain growth in single-phase aluminium. In Materials science forum (Vol. 519, pp. 153-160). Trans Tech Publications.

Jin, Y. G., Baek, H. M., Im, Y. T., & Jeon, B. C. (2011). Continuous ECAP process design for manufacturing a microstructure-refined bolt. *Materials Science and Engineering: A*, 530, 462-468.

Jin, Y. G., Baek, H. M., Hwang, S. K., Im, Y. T., & Jeon, B. C. (2012). Continuous high strength aluminum bolt manufacturing by the spring-loaded ECAP system. *Journal of Materials Processing Technology*, 212(4), 848-855.

Jining, Q., Di, Z., Guoding, Z., and Lee, J. C. (2005). Effect of temperature on texture formation of 6061 aluminum sheet in equal-channel angular pressin. *Material Science and Engineering A*, 408, 79–84.

Kang, J. H., Inoue, T., and Torizuka, S. (2010). Effect of shear strain on the microstructural evolution of a low carbon steel during warm deformation, *Materials Transactions*, 51(1), 27-35.

Karmakar, A., Karani, A., Patra, S., & Chakrabarti, D. (2013). Development of bimodal ferrite-grain structures in low-carbon steel using rapid intercritical annealing. *Metallurgical and Materials Transactions A*, 44(5), 2041-2052.

Kawasaki, M. and Langdon, T. G. (2014). Review: achieving superplasticity in metals processed by high-pressure torsion. *Journal of Materials Science*, 49(19), 6487-6496.

Khodabakhshi, F., & Kazeminezhad, M. (2011). The effect of constrained groove pressing on grain size, dislocation density and electrical resistivity of low carbon steel. *Materials & Design*, 32(6), 3280-3286.

Kim, D. K., Kang, S. Y., Lee, S., & Lee, K. J. (1999). Analysis and prevention of cracking phenomenon occurring during cold forging of two AISI 1010 steel pulleys. *Metallurgical and Materials Transactions A*, 30(1), 81-92.

Kim, H. S., Quang, P., Seo, M. H., Hong, S. I., Baik, K. H., Lee, H. R. and Nghiep, D. M. (2004). Process modelling of equal channel angular pressing for ultrafine grained materials. *Materials Transactions*, 45(7), 2172-2176.

Kim, J., Kim, I., and Shin, D.H. (2001). Development of deformation structures in low carbon steel by equal-channel angular pressing. *Scripta Materialia*. 45, 421–426.

Klöden, B., Oertel, C.-G., Skrotzki, W. and Rybacki, E. (2009). Texture Formation and Swift Effect in High Strain Torsion of NiAl. *Journal of Engineering Materials and Technology*, 131(1), 011102.

Klug, H.P., and Alexander, L.E. (1954) X-Ray Diffraction Procedures for Polycrystalline and Amorphous Materials, John Wiley, New York, NY, 491–94.

Koch, C. C. (2003). Optimization of strength and ductility in nanocrystalline and ultrafine grained metals. *Scripta Materialia*, 49(7), 657-662.

Köhler, U. and Bunge, H. (1995). Model Calculations of the Recrystallisation Texture Formatio in α -Iron. *Texture, Stress and Microstructure*, 23(2), 87-114.

Kornelyuk, L.G., Lozovoi, A.Y., and Razumovskii, I.M. (1998). Enhancement of diffusion in deformation-induced non-equilibrium grain boundaries. *Philosophical Magazine A*, 77(2), 465-474.

Kraus, L., Zrnik, J., Fujda, M., & Cieslarc, M. (2011). Grain Refinement of Low Carbon Steel by ECAP Severe Plastic Deformation.

Kumar, B. R., Sharma, S., & Mahato, B. (2011). Formation of ultrafine grained microstructure in the austenitic stainless steel and its impact on tensile properties. *Materials Science and Engineering: A*, 528(6), 2209-2216.

Kestens, L., Jonas, J.J. (1996). Modeling texture change during the static recrystallisation of interstitial free steels *Metallurgical and Materials Transactions A*. 27A, 155-164.

Lapovok, R. Y. (2005). The role of back-pressure in equal channel angular extrusion. *Journal of Materials Science*, 40(2), 341-346.

Lee, J. C., Shu, J. Y., & Ahn, J. P. (2003). Work-softening behavior of the ultrafine-grained Al alloy processed by high-strain-rate, dissimilar-channel angular pressing. *Metallurgical and Materials Transactions A*, 34(3), 625-632.

Li, S., Beyerlein, I. J, and Alexander, D. J. (2006). Characterization of deformation textures in pure copper processed by equal channel angular extrusion via route A, *Material Science and Engineering A*, 431, 339–345.

Lee, S.-H., Utsunomiya, H. and Sakai, T. (2004). Microstructures and mechanical properties of ultra low carbon interstitial free steel severely deformed by a multi-stack accumulative roll bonding process. *Materials Transactions*, 45(7), 2177-2181.

Lee, S., Kwon, D., Lee, Y. K., & Kwon, O. (1995). Transformation strengthening by thermomechanical treatments in C-Mn-Ni-Nb steels. *Metallurgical and Materials Transactions A*, 26(5), 1093-1100.

Leinonen, J. I. (2004). Superior properties of ultra-fine-grained steels. *Acta Polytechnica*, 44(3).

Li^b, S., Beyerlein, I. J., Alexander, D. J., and Vogel, S. C. (2005). Texture evolution during multi-pass equal channel angular extrusion of copper: Neutron diffraction characterization and polycrystal modeling. *Acta Materialia*, 53, 2111–2125.

Li^a, S., Beyerlein, I. J., and Bourke, M. A. (2005). Texture formation during equal channel angular axtrusion of fcc and bcc materials: comparison with simple shear, *Material Science and Engineering A*, 394, 66–77.

Li^a, S., Beyerlein, I. J. and Necker, C. T. (2006). On the development of microstructure and texture heterogeneity in ECAE via route C. *Acta Materialia* 54, 1397–1408.

Li^b, S., Gazder, A. A., Beyerlein, I. J., Pereloma, E. V., and Davies, C. H .J. (2006). Effect of processing route on microstructure and texture development in equal channel angular extrusion of interstitial-free steel. *Acta Materialia*, 54, 1087–1100.

Li, S., Gazder, A. A., Beyerlein, I. J., Davies Christopher, H. J., and Pereloma, E. V. (2007). Microstructure and texture evolution during equal channel angular extrusion of interstitial-free steel: effects of die angle and processing route. *Acta Materialia*, 55, 1017–1032.

Li, Y.J. Choi, P., Borchers, C., Westerkamp, S., Goto, S., Raabe, D., and Kirchheim, R. (2011). Atomic-scale mechanisms of deformation-inducedcementite decomposition in pearlite. *Acta Materialia*, 59, 3965–3977.

Lowe, T. C. (2006). Outlook for manufacturing materials by severe plastic deformation. Paper presented at the Materials Science Forum.

Ma^a, A., Suzuki, K., Nishida, Y., Saito, N., Shigematsu, I., Takagi, M., Imura, T. (2005). Impact toughness of an ultrafine-grained Al–11mass% Si alloy processed by rotary-die equal-channel angular pressing. *Acta Materialia*, 53(1), 211-220.

Ma^b, A., Suzuki, K., Saito, N., Nishida, Y., Takagi, M., Shigematsu, I. and Iwata, H. (2005). Impact toughness of an ingot hypereutectic Al–23mass% Si alloy improved by rotary-die equal-channel angular pressing. *Materials Science and Engineering: A*, 399(1), 181-189.

Ma, E. (2003). Instabilities and ductility of nanocrystalline and ultrafine-grained metals. *Scripta Materialia*, 49, 663–668.

Ma, E. (2006). Eight Routes to Improve the Tensile Ductility of Bulk Nanostructured Metals and Alloys. *JOM*, 5849–5853.

Maier, G. G., Astafurova, E. G., Maier, H. J., Naydenkin, E. V., Raab, G. I., Odessky, P. D., & Dobatkin, S. V. (2013). Annealing behavior of ultrafine grained structure in low-carbon steel produced by equal channel angular pressing. *Materials Science and Engineering: A*, 581, 104-107.

Manna, R., Agrawal, P., Joshi, S., Mudda, B. K., Mukhopadhyay, N. K., & Sastry, G. V. S. (2005). Physical modeling of equal channel angular pressing using plasticine. *Scripta Materialia*, 53(12), 1357-1361.

Manna, R., Mukhopadhyay, N.K., and Sastry, G.V.S. (2008). Effect of Equal Channel Angular Pressing on Microstructure and Mechanical Properties of Commercial Purity Aluminum. *Metallurgical and Materials Transactions A*, 39, 1525–1534.

Manna, R., Mukhopadhyay, N.K., and Sastry, G.V.S. (2012). R. Manna et al., Strengthening Behavior of Bulk Ultra Fine Grained Aluminum Alloys, *Materials Science Forum*, 710, 241-246.

Mizunuma, S. (2006). Large straining behavior and microstructure refinement of several metals by torsion extrusion process. *Materials Science Forum*. 503, 185-192.

Nakashima, K., Horita, Z., Nemoto, M. and Langdon, T. G. (2000). Development of a multi-pass facility for equal-channel angular pressing to high total strains. *Materials Science and Engineering: A*, 281(1), 82-87.

Nam, C. Y., Han, J. H., Chung, Y. H., & Shin, M. C. (2003). Effect of precipitates on microstructural evolution of 7050 Al alloy sheet during equal channel angular rolling. *Materials Science and Engineering: A*, 347(1), 253-257.

Nejadseyfi, O., Shokuhfar, A. and Moodi, V. (2015). Segmentation of copper alloys processed by equal-channel angular pressing. *Transactions of Nonferrous Metals Society of China*, 25(8), 2571-2580.

Oh, S. and Kang, S. (2003). Analysis of the billet deformation during equal channel angular pressing. *Materials Science and Engineering: A*, 343(1), 107-115.

Orlov, D., Beygelzimer, Y., Synkov, S., Varyukhin, V., Tsuji, N. and Horita, Z. (2009). Plastic flow, structure and mechanical properties in pure Al deformed by twist extrusion. *Materials Science and Engineering: A*, 519(1), 105-111.

Oruganti, R., Subramanian, P., Marte, J., Gigliotti, M. F. and Amacherla, S. (2005). Effect of friction, backpressure and strain rate sensitivity on material flow during equal channel angular extrusion. *Materials Science and Engineering: A*, 406(1), 102-109.

Park, K. T., Kim, Y. S., Lee, J. G., & Shin, D. H. (2000). Thermal stability and mechanical properties of ultrafine grained low carbon steel. *Materials Science and Engineering: A*, 293(1), 165-172.

Park, K. T., Lee, C. S., & Shin, D. H. (2005). Strain hardenability of ultrafine grained low carbon steels processed by ECAP. *Reviews on Advanced Materials Science*, 10(2), 133-137.

Park, K. T., & Shin, D. H. (2002). Annealing behavior of submicrometer grained ferrite in a low carbon steel fabricated by severe plastic deformation. *Materials Science and Engineering: A*, 334(1), 79-86.

Pashinska, E., Varyukhin, V., Zavdoveev, A., Burkhevetskii, V. and Glazunova, V. (2012). Electron backscattered diffraction method in the analysis of deformed steel structures. arXiv preprint arXiv:1205, 2232.

Patra, S., Hasan, Sk.Md., Narasaiah, N., and Chakrabarti D. (2012). Effect of bimodal distribution in ferrite grain sizes on the tensile properties of low-carbon steels. Materials Science and Engineering A, 538 145– 155.

Pereloma, E. V. Gazder, A. A. and Davies, C. H. J. (2005). Texture development in interstitial-free (IF) steel subjected to two cycles of equal channel angular extrusion. Material Science Forum, 495-497, 809-814.

Petch, N. J. (1953). The Cleavage Strength of Polycrystals. J. of the Iron and Steel Inst., 174, 25-28.

Prangnell, P. B., Bowen, J. R., & Apps, P. J. (2004). Ultra-fine grain structures in aluminium alloys by severe deformation processing. Materials Science and Engineering: A, 375, 178-185.

Prangnell, P.B., Huang, Y., Berta, M., and Apps, P.J. (2007). Proc. Int. Symp. on Fundamentals of Deformation and Annealing, Prangnell, P.B., and Bate, P.S. eds., Trans Tech, Zurich.

Purcek, G., Saray, O., Nagimov, M. I., Nazarov, A. A., Safarov, I. M., Danilenko, V. N., & Mulyukov, R. R. (2012). Microstructure and mechanical behavior of UFG copper processed by ECAP following different processing regimes. Philosophical Magazine, 92(6), 690-704.

Raab, G. J., Valiev, R. Z., Lowe, T. C., & Zhu, Y. T. (2004). Continuous processing of ultrafine grained Al by ECAP-Conform. Materials Science and Engineering: A, 382(1), 30-34.

Reis, A.C.C., Kesten, L., Houbaert, Y. (2005). Lamellar subdivision during accumulative roll bonding of a titanium interstitial free steel. Material Science Forum. 495-497, 351-356.

Raab, G. (2005). Plastic flow at equal channel angular processing in parallel channels. Materials Science and Engineering: A, 410, 230-233.

Rauch, E. F. (1992). The flow law of mild steel under monotonic or complex strain path. Paper presented at the Solid State Phenomena.

Rauch, E. and Schmitt, J.-H. (1989). Dislocation substructures in mild steel deformed in simple shear. Materials Science and Engineering: A, 113, 441-448.

Ray, R. K., Jonas, J. J. (1990). Transformation textures in steels. International Materials Reviews, 35(1), 1-36.

Ray, R. K., Jonas, J. J., Hook, R. E. (1994). Cold rolling and annealing textures in low carbon and extra low carbon steels. International materials reviews, 39(4), 129-172.

Rosochowski, A., & Olejnik, L. (2012). Severe plastic deformation for grain refinement and enhancement of properties. Woodhead Publishing in Materials. 114-141.

Rusin, N. (2006). Effect of ECAP routes on the specific features of the —end effect. The Physics of Metals and Metallography, 102(2), 226-232.

Safarov, I. M., Korznikov, A. V., Galeev, R. M., Sergeev, S. N., Gladkovskii, S. V., Borodin, E. M., Pyshmintsev, I. Y. (2014). Strength and impact toughness of low-carbon steel with fibrous ultrafine-grained structure. The Physics of Metals and Metallography, 115(3), 295.

Saito, Y., Utsunomiya, H., Suzuki, H., & Sakai, T. (2000). Improvement in the r-value of aluminum strip by a continuous shear deformation process. Scripta Materialia, 42(12), 1139-1144.

Saito, Y., Utsunomiya, H., Tsuji, N., & Sakai, T. (1999). Novel ultra-high straining process for bulk materials—development of the accumulative roll-bonding (ARB) process. Acta Materialia, 47(2), 579-583.

Sakai, G., Nakamura, K., Horita, Z. and Langdon, T. G. (2005). Developing high-pressure torsion for use with bulk samples. Materials Science and Engineering: A, 406(1), 268-273.

Salishchev, G., Zaripova, R., Galeev, R. and Valiakhmetov, O. (1995). Nanocrystalline structure formation during severe plastic deformation in metals and their deformation behaviour. Nanostructured Materials, 6(5), 913-916.

Sauvage, X., & Ivanisenko, Y. (2007). The role of carbon segregation on nanocrystallisation of pearlitic steels processed by severe plastic deformation. Journal of Materials Mcience, 42(5), 1615-1621.

Segal, V. (1999). Equal channel angular extrusion: from macromechanics to structure formation. Materials Science and Engineering: A, 271(1), 322-33.

Segal, V., Goforth, R. E. and Hartwig, K. T. (1995). Apparatus and method for deformation processing of metals, ceramics, plastics and other materials: Google Patents.

Segal, V.M., Reznikov, V.I., Kopylov, V.I., Pavlik, D.A., Malyshev, V.F. (1994) Processy Plasticeskogo Structyroob razovania Metallov. Minsk: Sci Eng [in Russian].

Segal, V. (1977). The method of material preparation for subsequent working. Patent of the USSR(575892).

Saeidi, N., Ashrafizadeh, F., & Niroumand, B. (2014). Development of a new ultrafine grained dual phase steel and examination of the effect of grain size on tensile deformation behavior. Materials Science and Engineering: A, 599, 145-149.

Shin, D. H., Han, S. Y., Park, K. T., Kim, Y. S., & Paik, Y. N. (2003). Spheroidization of low carbon steel processed by equal channel angular pressing. Materials Transactions, 44(8), 1630-1635.

Shin, D.H., Kim, B.C., Kim, Y.S., and Park, K.T. (2000). Microstructural evolution in commercial low carbon steel by equal channel angular pressing. *Acta Materialia*, 48, 2247-2255.

Shin^a, D.H., Kim, I., Kim, J., and Park, K.T. (2001). Grain refinement mechanism during equal-channel angular pressing of a low carbon steel. *Acta Materialia*, 49, 1285–1292.

Shin^b, D. H., Kim, J., and Park, K. T. (2001). A new low carbon steel microstructure: Ultrafine ferrite grains with homogeneously distributed fine cementite particles. *Metals and Materials International*, 7(5), 431~443.

Shin, D.H., and Park, K.T. (2005). Ultrafine grained steels processed by equal-channel angular pressing. *Materials Science and Engineering A*, 410–411, 299–302.

Singh, R., Kumar, S., Mukhopadhyay, N.K., Sastry, G.V.S., and Manna, R. (2013). Development of bulk ultrafine-grained cold reducible grade low carbon steel produced by equal-channel angular pressing. *International Journal of Metallurgical Engineering*, 2(1), 62-68.

Smallman, R. E., & Westmacott, K. H. (1957). Stacking faults in face-centred cubic metals and alloys. *Philosophical Magazine*, 2(17), 669-683.

Soleymani, V. and Eghbali, B. (2012). Grain Refinement in a Low Carbon Steel Through Multidirectional Forging. *Journal of Iron and Steel Research, International*, 19(10), 74-78.

Somjeet, B., Satyaveer, S. D., & Satyam, S. (2009). Microstructure and texture in steels and other materials. Springer-Verlag, London. 465.

Song, R., Ponge, D., Raabe, D., Speer, J. G., & Matlock, D. K. (2006). Overview of processing, microstructure and mechanical properties of ultrafine grained bcc steels. *Materials Science and Engineering: A*, 441(1), 1-17.

Song, Y., Wang, W., Gao, D., Kim, H.-S., Yoon, E.-Y., Lee, D.-J., . . . Guo, J. (2012). Inhomogeneous hardness distribution of high pressure torsion processed IF steel disks. *Materials Sciences and Applications*, 3(04), 234.

Song, Y., Wang, W., Gao, D., Yoon, E. Y., Lee, D. J., Lee, C. S. and Kim, H. S. (2013). Hardness and microstructure of interstitial free steels in the early stage of high-pressure torsion. *Journal of Materials Science*, 48(13), 4698-4704.

Srinivasan, R., Cherukuri, B. and Chaudhury, P. K. (2006). Scaling up of equal channel angular pressing (ECAP) for the production of forging stock. Paper presented at the Materials Science Forum.

Stibitz, G. R. (1936). Energy of lattice distortion. *Phys. Rev*, 49, 859.

Suh, J. Y., Han, J. H., Oh, K. H., & Lee, J. C. (2003). Effect of deformation histories on texture evolution during equal-and dissimilar-channel angular pressing. *Scripta Materialia*, 49(2), 185-190.

Suwas, S., & Gurao, N. P. (2008). Crystallographic texture in Materials. *Journal of the Indian Institute of Science*, 88(2).

Suwas, S., Massion, R. A., Tóth, L. S., Fundenberger, J. J., and Beausir, B. (2009). Evolution of texture during equal channel angular extrusion of commercially pure aluminum: Experiments and simulations. *Material Science and Engineering A*, 520, 134–146.

Tamimi, S., Katabchi, M., Parvin, N., Sanjari, M. and Lopes, A. (2014). Accumulative Roll Bonding of pure copper and IF steel. *International Journal of Metals*.

Tarpani, J. R., Braz, M. H., Bose Filho, W. W., & Spinelli, D. (2002). Microstructural and Fractographic Characterization of a Thermally Embrittled Nuclear Grade Steel: Part I-Annealing. *Materials Research*, 5(3), 357-364.

Tidu, A., Wagner, F., Huang, H. W., Kao, P. W., Chang, C. P., and Grosdidier, T. (2000). X-ray characterisation of size, strain and texture inhomogeneities in ultra fine grained copper processed by equal channel angular extrusion. *J. Phys IV France*, 10, 211–217.

Toth, L. S., & Gu, C. (2014). Ultrafine-grain metals by severe plastic deformation. *Materials Characterization*, 92, 1-14.

Tóth, L.S., Jonas, J.J., Daniel, D., Ray, R.K. (1990) Development of ferrite rolling textures in low carbon and extra low-carbon steels. *Metallurgical and Material Transactions A* 21:2985–3000.

Tóth, L. S., Lapovok, R., Hasani, A., & Gu, C. (2009). Non-equal channel angular pressing of aluminum alloy. *Scripta Materialia*, 61(12), 1121-1124.

Toth, L. S., Massion, R. A., Germain, L., Baik, S. C. Suwas, S., (2004). Analysis of texture evolution in equal channel angular pressing of copper using a new flow field, *Acta Materialia*, 52, 1885-1898.

Tsuji, N., Okuno, S., Koizumi, Y., & Minamino, Y. (2004). Toughness of ultrafine grained ferritic steels fabricated by ARB and annealing process. *Materials Transactions*, 45(7), 2272-2281.

Ueki, M., Horie, S., & Nakamura, T. (1987). High temperature deformation and thermomechanical treatment of low carbon steel and vanadium-niobium microalloyed steel. *Transactions of the Iron and Steel Institute of Japan*, 27(6), 453-459.

Urabe, T., Jonas, J.J. (1994). Modeling texture change during the recrystallisation of an IF steel. *ISIJ international*, 34(5), 435-442.

Utsunomiya, H., Hatsuda, K., Sakai, T., & Saito, Y. (2004). Continuous grain refinement of aluminum strip by conshearing. *Materials Science and Engineering: A*, 372(1), 199-206.

Valiev, R. Z., Islamgaliev, R. K., & Alexandrov, I. V. (2000). Bulk nanostructured material from severe plastic deformation. *Progress in Materials Science*, 45(2), 103-189.

Valiev, R. Z., Alexandrov, I. V., Zhu, Y. T., & Lowe, T. C. (2002). Paradox of strength and ductility in metals processed by severe plastic deformation. *Journal of Materials Research*, 17(1), 5-8.

Valiev, R. Z., & Langdon, T. G. (2006). Principles of equal-channel angular pressing as a processing tool for grain refinement. *Progress in Materials Science*, 51(7), 881-981.

Valiev, R. Z. (2013). Nanostructured alloys: large tensile elongation. *Nature materials*, 12(4), 289-291.

Valiev, R. Z., Ivanisenko, Y. V., Rauch, E. and Baudelet, B. (1996). Structure and deformaton behaviour of Armco iron subjected to severe plastic deformation. *Acta Materialia*, 44(12), 4705-4712.

Verma^b, D., Mukhopadhyay, N. K., Sastry, G. V. S., & Manna, R. (2016). Ultra-High-Strength Interstitial-Free Steel Processed by Equal-Channel Angular Pressing at Large Equivalent Strain. *Metallurgical and Materials Transactions A*, 47(4), 1803-1817.

Verma, D., Mukhopadhyay, N. K., Sastry, G. V. S., & Manna, R. (2017). Microstructure and Mechanical Properties of Ultrafine-Grained Interstitial-Free Steel Processed by ECAP. *Transactions of the Indian Institute of Metals*, 70(4), 917-926.

Verma^a, D., Shekhawat, S. K., Mukhopadhyay, N. K, Sastry, G. V. S, and Manna, R. (2016). Development of texture in interstitial-free steel processed by equal-channel angular pressing. *Journal of Materials Engineering and Performance*. 25(3), 820-830.

Wang, Y. M., Chen, M. W., Zhou, F., and Ma, E. (2002). High tensile ductility in a nanostructured metal. *Nature (London)*, 419, 912–914.

Wang, Y.M., and Ma, E. (2004). Three strategies to achieve uniform tensile deformation in a nanostructured metal. *Acta Materialia*, 52, 1699–1709.

Wang, J. T., Xu, C., Du, Z.Z., Qu, G.Z., and Langdon, T. G. (2005). Microstructure and properties of a low-carbon steel processed by equal-channel angular pressing. *Materials Science and Engineering: A*, 410, 312–15.

Wang, T. S., Li, Z., Zhang, B., Zhang, X. J., Deng, J. M., & Zhang, F. C. (2010). High tensile ductility and high strength in ultrafine-grained low-carbon steel. *Materials Science and Engineering: A*, 527(10), 2798-2801.

Wei, W., Nagasekhar, A., Chen, G., Tick-Hon, Y. and Wei, K. X. (2006). Origin of inhomogenous behavior during equal channel angular pressing. *Scripta Materialia*, 54(11), 1865-1869.

Wetscher, F., Vorhauer, A., Stock, R. and Pippian, R. (2004). Structural refinement of low alloyed steels during severe plastic deformation. *Materials Science and Engineering: A*, 387, 809-816.

Williamson, G. K., & Smallman, R. E. (1956). III. Dislocation densities in some annealed and cold-worked metals from measurements on the X-ray debye-scherrer spectrum. *Philosophical Magazine*, 1(1), 34-46.

Wolf, D. (1989). Correlation between energy and volume expansion for grain boundaries in fcc metals. *Scripta Metallurgica*, 23(11), 1913-1918.

Yu, H., Tieu, A. K., Lu, C., Liu, X., Liu, M., Godbole, A., Kong, C., Qin, Q. (2015). A new insight into ductile fracture of ultrafine-grained Al-Mg alloys. *Scientific Reports*. 5(9568), 1-9.

Yoda, R., Shibata, K., Morimitsu, T., Terada, D. and Tsuji, N. (2011). Formability of ultrafine-grained interstitial-free steel fabricated by accumulative roll-bonding and subsequent annealing. *Scripta Materialia*, 65(3), 175-178.

Zhang, K., Alexandrov, I.V., Kilmametovz, A.R., Valievz, R.Z., and Luy, K. (1997).The crystallite-size dependence of structural parameters in pure ultrafine-grained copper. *J. Phys. D: Applied Physics*. 30, 3008–3015.

Zhang, P., Li, S. X., & Zhang, Z. F. (2011). General relationship between strength and hardness. *Materials Science and Engineering: A*, 529, 62-73.

Zhang, Z., Son, I., Im, Y. and Park, J. (2007). Finite element analysis of plastic deformation of CP-Ti by multi-pass equal channel angular extrusion at medium hot-working temperature. *Materials Science and Engineering: A*, 447(1), 134-141.

Zheng, J. J., Li, C. S., He, S., Cai, B., & Song, Y. L. (2016). Microstructural and tensile behavior of Fe-36% Ni alloy after cryorolling and subsequent annealing. *Materials Science and Engineering: A*, 670, 275-279.

Zherebtsov, S. V., Salishchev, G. A., Galeev, R. M., Valiakhmetov, O. R., Mironov, S. Y., & Semiatin, S. L. (2004). Production of submicrocrystalline structure in large-scale Ti-6Al-4V billet by warm severe deformation processing. *Scripta Materialia*, 51(12), 1147-1151.

Zhilyaev, A., Nurislamova, G., Kim, B.-K., Baró, M., Szpunar, J. and Langdon, T. (2003). Experimental parameters influencing grain refinement and microstructural evolution during high-pressure torsion. *Acta Materialia*, 51(3), 753-765.

Zhilyaev, A. P., Oh-ishi, K., Raab, G. I., McNelley, T. R. (2006). Influence of ECAP processing parameters on texture and microstructure of commercially pure aluminum, *Material Science and Engineering. A*, 441, 245–252.

Zhu, Y. T., & Langdon, T. G. (2004). The fundamentals of nanostructured materials processed by severe plastic deformation. *JOM Journal of the Minerals, Metals and Materials Society*, 56(10), 58-63.

Zhu, Y. T., & Lowe, T. C. (2000). Observations and issues on mechanisms of grain refinement during ECAP process. *Materials Science and Engineering: A*, 291(1), 46-53.

Zhu, Y., Valiev, R. Z., Langdon, T. G., Tsuji, N., & Lu, K. (2010). Processing of nanostructured metals and alloys via plastic deformation. *MRS bulletin*, 35(12), 977-981.

Zhilyaev, A. P. and Langdon, T. G. (2008). Using high-pressure torsion for metal processing: Fundamentals and applications. *Progress in Materials Science*, 53(6), 893-979.

Zhilyaev, A., Lee, S., Nurislamova, G., Valiev, R. and Langdon, T. (2001). Microhardness and microstructural evolution in pure nickel during high-pressure torsion. *Scripta Materialia*, 44(12), 2753-2758.

