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Education Information

Doctorate, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, Turkey 2002 - 2008

Postgraduate, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, Turkey 2000 - 2002

Undergraduate, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, Turkey 1995 - 2000

Dissertations

Doctorate, 3D finite element simulation of steel quenching in order to determine the microstructure and residual stresses, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, 2008

Postgraduate, Low velocity ballistic characterization of steel armour plates by drop-weight tests, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, 2002

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, 2019 - Continues

Assistant Professor, Atilim University, Faculty Of Engineering, Department Of Manufacturing Engineering, 2011 - 2019

Lecturer, Atilim University, Faculty Of Engineering, Department Of Manufacturing Engineering, 2010 - 2011

Research Assistant, Middle East Technical University, Faculty of Engineering, Department of Metallurgical and Materials Engineering, 2000 - 2006

Academic and Administrative Experience

Assistant Manager of Research and Application Center, Atilim University, Metal Efformation Perfection Application And Research Center, 2016 - 2017

Assistant Manager of Research and Application Center, Atilim University, Metal Efformation Perfection Application And Research Center, 2012 - 2014

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

I. Excessive damage increase in dual phase steels under high strain rates and temperatures

Cobanoglu M., Ertan R. K. , ŞİMŞİR C., EFE M.

INTERNATIONAL JOURNAL OF DAMAGE MECHANICS, vol.30, no.2, pp.283-296, 2021 (Journal Indexed in SCI)

- II. **A flow stress model for steel in cold forging process range and the associated method for parameter identification**
Simsir C., Duran D.
INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY, vol.94, pp.3795-3808, 2018 (Journal Indexed in SCI)
- III. **Dynamic strain aging in DP steels at forming relevant strain rates and temperatures**
BAYRAMIN B., Simsir C., EFE M.
MATERIALS SCIENCE AND ENGINEERING A-STRUCTURAL MATERIALS PROPERTIES MICROSTRUCTURE AND PROCESSING, vol.704, pp.164-172, 2017 (Journal Indexed in SCI)
- IV. **Simulation of through-hardening of SAE 52100 steel bearings - Part II: Validation at industrial scale**
Evcil G. E. , Mustak O., Simsir C.
MATERIALWISSENSCHAFT UND WERKSTOFFTECHNIK, vol.47, no.8, pp.746-754, 2016 (Journal Indexed in SCI)
- V. **Simulation of through-hardening of SAE 52100 steel bearings - Part I: Determination of material properties**
Mustak O., Evcil G. E. , Simsir C.
MATERIALWISSENSCHAFT UND WERKSTOFFTECHNIK, vol.47, no.8, pp.735-745, 2016 (Journal Indexed in SCI)
- VI. **Multiscale modeling of tempering of AISI H13 hot-work tool steel - Part 2: Coupling predicted mechanical properties with FEM simulations**
Eser A., Broeckmann C., Simsir C.
COMPUTATIONAL MATERIALS SCIENCE, vol.113, pp.292-300, 2016 (Journal Indexed in SCI)
- VII. **Multiscale modeling of tempering of AISI H13 hot-work tool steel - Part 1: Prediction of microstructure evolution and coupling with mechanical properties**
Eser A., Broeckmann C., Simsir C.
COMPUTATIONAL MATERIALS SCIENCE, vol.113, pp.280-291, 2016 (Journal Indexed in SCI)
- VIII. **Simulation and Optimization in Materials Technology**
Guerrero M., Simsir C., Deus A., Sarler B.
ADVANCES IN MATERIALS SCIENCE AND ENGINEERING, vol.2014, 2014 (Journal Indexed in SCI)
- IX. **Process-chain simulation for prediction of the distortion of case-hardened gear blanks**
Simsir C., Hunkel M., Luetjens J., Rentsch R.
MATERIALWISSENSCHAFT UND WERKSTOFFTECHNIK, vol.43, pp.163-170, 2012 (Journal Indexed in SCI)
- X. **Parameter identification for an Armstrong-Frederick hardening law for supercooled austenite of SAE 52100 steel**
Wolff M., Suhr B., Simsir C.
COMPUTATIONAL MATERIALS SCIENCE, vol.50, no.2, pp.487-495, 2010 (Journal Indexed in SCI)
- XI. **Dimensional analysis of the thermomechanical problem arising during through-hardening of cylindrical steel components**
Simsir C., Luebben T., Hoffmann F., Zoch H.
COMPUTATIONAL MATERIALS SCIENCE, vol.49, no.3, pp.462-472, 2010 (Journal Indexed in SCI)
- XII. **The Bauschinger effect in the supercooled austenite of SAE 52100 steel**
Simsir C., Dalgic M., Luebben T., Irretier A., Wolff M., Zoch H. W.
ACTA MATERIALIA, vol.58, no.13, pp.4478-4491, 2010 (Journal Indexed in SCI)
- XIII. **Quantitative analysis of the influence of strain hardening on equal channel angular pressing process**
ŞİMŞİR C., Karpuz P., GÜR C. H.
COMPUTATIONAL MATERIALS SCIENCE, vol.48, no.3, pp.633-639, 2010 (Journal Indexed in SCI)
- XIV. **A Simulation of the Quenching Process for Predicting Temperature, Microstructure and Residual Stresses**
Simsir C., GÜR C. H.
STROJNISKI VESTNIK-JOURNAL OF MECHANICAL ENGINEERING, vol.56, no.2, pp.93-103, 2010 (Journal Indexed in SCI)
- XV. **Investigating the effects of hardening of aluminium alloys on equal-channel angular pressing-A finite-element study**

Karpuz P., Simsir C., GÜR C. H.

Materials Science and Engineering A, vol.503, pp.148-151, 2009 (Journal Indexed in SCI Expanded)

XVI. **A review on modeling and simulation of quenching**

Şimşir C., Hakan Gür C. H.

Journal of ASTM International, vol.6, no.2, 2009 (Journal Indexed in SCI Expanded)

XVII. **A FEM based framework for simulation of thermal treatments: Application to steel quenching**

Şimşir C., GÜR C. H.

COMPUTATIONAL MATERIALS SCIENCE, vol.44, no.2, pp.588-600, 2008 (Journal Indexed in SCI)

XVIII. **3D FEM simulation of steel quenching and investigation of the effect of asymmetric geometry on residual stress distribution**

Simsir C., GÜR C. H.

JOURNAL OF MATERIALS PROCESSING TECHNOLOGY, vol.207, pp.211-221, 2008 (Journal Indexed in SCI)

Articles Published in Other Journals

I. **Transformation Induced Plasticity (TRIP) of SAE 52100 Steel during Martensitic and Bainitic Transformations**

Şimşir C.

Hittite Journal of Science Engineering, vol.4, no.2, pp.125-130, 2017 (Other Refereed National Journals)

II. **Simulation trends in quenching technology for automotive components**

Felde I., Şimşir C.

International Heat Treatment and Surface Engineering, vol.8, no.1, pp.42-48, 2014 (Refereed Journals of Other Institutions)

III. **Simulation of Quenching: A Review**

GÜR C. H. , Şimşir C.

MATERIALS PERFORMANCE AND CHARACTERIZATION, vol.1, no.1, 2012 (Journal Indexed in ESCI)

IV. **Anisotropic Transformation Strain and Its Consequences on Distortion during Austenitization**

Simsir C., Lubben T., Hunkel M., Hoffmann F., Zoch H.

MATERIALS PERFORMANCE AND CHARACTERIZATION, vol.1, no.1, 2012 (Journal Indexed in ESCI)

V. **Metallurgical influence on quench distortion of SAE 52100 long cylinders**

Maradit B., Şimşir C., Lübben T., GÜR C. H.

International Heat Treatment and Surface Engineering, vol.5, no.2, pp.57-60, 2011 (Refereed Journals of Other Institutions)

VI. **A new framework for simulation of heat treatments**

Şimşir C., GÜR C. H.

International Journal of Microstructure and Materials Properties, vol.5, pp.399-411, 2010 (Refereed Journals of Other Institutions)

VII. **A review on modeling and simulation of quenching**

Şimşir C., Hakan Gür C. H.

ASTM Special Technical Publication, pp.117-156, 2010 (Refereed Journals of Other Institutions)

VIII. **Simulation of equal channel angular pressing applied to produce structures with ultrafine-sized grains**

Karpuz P., ŞİMŞİR C., Hakan Gür C. H.

International Journal of Microstructure and Materials Properties, vol.4, no.3, pp.356-367, 2009 (Refereed Journals of Other Institutions)

IX. **A mathematical framework for simulation of thermal processing of materials: Application to steel quenching**

Şimşir C., GÜR C. H.

Turkish Journal of Engineering and Environmental Sciences, vol.32, no.2, pp.85-100, 2008 (Refereed Journals of Other Institutions)

X. A Mathematical Framework for Simulation of Thermal Processing of Materials

ŞİMŞİR C., GÜR C. H.

Turkish Journal of Engineering and Environmental Sciences, vol.32, pp.85-100, 2008 (Other Refereed National Journals)

Books & Book Chapters

I. Simulation of Quenching

Şimşir C., Gür C. H.

in: Encyclopedia of Iron, Steel, 1st Edition, R.Colas,G.E.Totten, Editor, CRC, New York , Oxford, pp.2892-2939, 2016

II. Modelling and Simulation of Steel Heat Treatment: Prediction of Microstructure, Distortion, Residual Stresses and Cracking

ŞİMŞİR C.

in: ASM Handbook Vol 4B Steel Heat Treatment and Fundamentals, Lumpman, S., Editor, ASM International, Ohio, pp.409-466, 2014

III. Simulation of Quenching

ŞİMŞİR C., GÜR C. H.

in: Quenching Theory and Technology 2nd Edition, Liscic, B., Totten, G.E., Tensi, H.M., Canale, L.C.F., Editor, CRC Press, Taylor Francis Group, New York, pp.603-666, 2010

IV. A Review on Modeling and Simulation of Quenching

Şimşir C., Gür C. H.

in: TP 1523 (Selected Technical Papers) : Quenching and Cooling, Residual Stress and Distortion Control, L.C.F. Canale,M. Narazaki, Editor, ASTM : American Society for Testing and Materials , Ohio, 2010

V. Simulation of Quenching

ŞİMŞİR C., GÜR C. H.

in: Handbook of Thermal Process Modeling of Steels, GÜR C.H., PAN, J., Editor, CRC Press, Taylor Francis, New York, pp.341-425, 2009

Refereed Congress / Symposium Publications in Proceedings

I. A Material Perspective on Consequences of Deformation Heating During Stamping of DP Steels

Şimşir C., Davut K., Efe M., Çetin B.

International Deep Drawing Research Group (IDDRG), Munich, Germany, 2 - 06 July 2017, vol.896

II. A Potential Solution to Mystical Materials in Indentation Test

Billur E., Cetin B., Music O., Simsir C., Davut K.

International Conference on the Technology of Plasticity (ICTP), Cambridge, Canada, 17 - 22 September 2017, vol.207, pp.962-967

III. Sensitivity Analysis of Distortion of Carburized Steel Shafts Using Computer Simulations

Yazır B., Evcil E., Yıldız S., DAVUT K., ŞİMŞİR C.

18th International Metallurgy Materials Congress (IMMC2016), İstanbul, Turkey, 29 September - 01 October 2016, pp.385-389

IV. Determination of Factors Influencing Distortion of Carburized Quenching of Steel Shafts Using DoE with Computer Simulations

Yılmaz H., Yazır B., Yıldız S., DAVUT K., ŞİMŞİR C.

18th International Metallurgy and Materials Conference (IMMC2016), İstanbul, Turkey, 29 September - 01 October 2016, pp.932-936

V. Determination of Isothermal Austenite Grain Growth Model Parameters for SAE 8620H Carburizing Steel

Yıldız S., Yılmaz H., Yazır B., Evcil E., ŞİMŞİR C., DAVUT K.

18th International Metallurgy and Materials Conference (IMMC2016), İstanbul, Turkey, 29 September - 01 October 2016, pp.485-489

- VI. **Nondestructive Monitoring of the Variations in Microstructure and Residual Stress in the Carburized Steels**
Hızlı H., DAVUT K., ŞİMŞİR C., GÜR C. H.
19th World Conference on Non-Destructive Testing, Munich, Germany, 13 - 17 June 2016
- VII. **Simulation of Through Hardening of SAE 52100 Steel Bearings Part I Determination of Material Properties**
Müstak O., ŞİMŞİR C.
5th International Conference on Distortion Engineering (IDE2015), Bremen, Germany, 23 - 25 September 2015, pp.456-466
- VIII. **Simulation of Through Hardening of SAE 52100 Steel Bearings Part II Validation at Industrial Scale**
Evcil E., Müştak O., ŞİMŞİR C.
5th International Conference on Distortion Engineering (IDE2015), Bremen, Germany, 23 - 25 September 2015, pp.465-472
- IX. **Evaluating the Stress State of Steels by Simultaneous X ray Diffraction and Magnetic Barkhausen Noise Measurements during Four point Bending Tests**
Öztürk Z., DAVUT K., ŞİMŞİR C.
11th Int Conf on Barkhausen Noise Micromagnetic Testing (ICBM 11), İzmir, Turkey, 18 - 20 June 2015
- X. **Optimization of Sensitivity and Reliability of Magnetic Barkhausen Technique for Detecting Hardness Differences on Quenched and Tempered AISI 4140 Steels**
Arslan E., DAVUT K., ŞİMŞİR C.
11th Int Conf on Barkhausen Noise Micromagnetic Testing (ICBM 11), İzmir, Turkey, 18 - 20 June 2015
- XI. **Non destructive Characterization of Prior Austenite Structure of AISI D2 Tool Steel by Magnetic Barkhausen Noise Technique**
DAVUT K., KILIÇLI V., Murathan Ö. F., ŞİMŞİR C.
11th Int Conf on Barkhausen Noise Micromagnetic Testing (ICBM 11), İzmir, Turkey, 18 - 20 June 2015
- XII. **Determination of Flow Curves of the Metastable Austenite**
Şimşir C., Müştak O., Davut K., Gür C. H.
International Metallurgy and Materials Engineering Conference (IMMC`2014), İstanbul, Turkey, 01 September 2014, pp.464-470
- XIII. **Experimental Investigation of Transformation Plasticity of SAE 52100 Bearing Steel**
Şimşir C., Müştak O., Davut K., Gür C. H.
2nd International Conference of Metal Forming (METFORM`2014), İstanbul, Turkey, 01 January 2014
- XIV. **Review on the Heat Treatment Simulation in Gear Manufacturing**
Şimşir C., Felde E.
2nd Mediterranean Conference on Heat Treatment and Surface Engineering, Dubrovnik, Croatia, 11 - 13 June 2013, pp.419-428
- XV. **Simulation and optimization in quenching technology for automotive components**
Felde I., Simsir C.
1st International Conference and Exhibition on Heat Treatment and Surface Engineering, HT and SE 2013, Chennai, India, 16 - 18 May 2013, pp.145-154
- XVI. **Simulation of the Deformation and Residual Stress Evaluation during Tempering of a Hot Work Tool Steel**
Eser A., Bezold A., Bröckmann C., ŞİMŞİR C.
3rd International Conference on Distortion Engineering, IDE 2011, Bremen, Germany, 14 - 16 September 2011, pp.515-522
- XVII. **Simulation des Verzugs beim Anlassen dickwandiger Bauteile aus 56NiCrMoV7**
Şimşir C., Eser A., Bezold A., Broechmann C.
Haerterei Kolloquium 2012, Wiesbaden, Germany, 10 - 12 October 2012
- XVIII. **FEM Modelling of the Distortion of the Blank Case Hardened Gear Blanks due to Chemical Banding**

ŞİMŞİR C., Hunkel M., Rentsch R., Lütjens J.

6th International Conference on Quenching and Control of Distortion, Chicago, Illinois, United States Of America, 9 - 13 September 2012, pp.465-476

- XIX. Tempering of Tool Steels – A Multiscale Simulation**
Şimşir C., Eser A., Broeckmann C., Kozeschnik E.
9th International Congress on Tooling, Leoben, Austria, 11 - 14 September 2012
- XX. Investigation of Surface Residual Stresses on the Deep-Drawn Steel Sheets**
Şimşir C., Adıgüzel S., Gür C. H.
16th International Metallurgy and Materials Congress (IMMC'12), İstanbul, Turkey, 13 - 15 September 2012
- XXI. Anisotropic Transformation Strain and Its Consequences on Distortion during Austenitization**
Şimşir C., Lübben T., Hunkel M., Hoffmann F.
5th International Metallurgy and Materials Engineering Conference (IMMC), İstanbul, Turkey, 01 June 2012
- XXII. The Prediction of Distortion of Case Hardened Gear Blanks by Considering the Effect of Prior Manufacturing Operation**
ŞİMŞİR C., Hunkel M., Lütjens J., Rentsch R.
3rd International Conference on Distortion Engineering, IDE 2011, Bremen, Germany, 14 - 16 September 2011
- XXIII. The Prediction of Distortion of Blank Hardened Gear Blanks by Considering the Effect of Prior Manufacturing Operations**
ŞİMŞİR C., Eisbrecher I., Hunkel M., Lübben T., Hoffmann F.
The 10th International Conference on Technology of Plasticity, ICTP 2011, Aachen, Germany, 25 - 30 September 2011, pp.386-391
- XXIV. Simulation of Deformation and Residual Stress Evolution during Quenching and Tempering of Tool Steel**
Şimşir C., Eser A., Bezold A., Broeckmann C., Bambauer K.
3rd International Conference on Heat Treatment and Surface Engineering of Tools and Dies, Wels, Austria, 01 January 2011, pp.33-42
- XXV. Metallurgical influence on quench distortion of SAE 52100 long cylinders**
Maradit B. P. , Simsir C., Lubben T., Gur C. H.
65th ABM International Congress, 18th IFHTSE Congress and 1st TMS/ABM International Materials Congress 2010, Rio de Janeiro, Brazil, 26 - 30 July 2010, vol.6, pp.4833-4841
- XXVI. Prediction of distortions in through hardening of cylindrical steel workpieces by dimensional analysis**
Şimşir C., Lübben T., Hoffmann F., Zoch W., Wolff M.
Proceedings of the New Challenges in Heat Treatment and Surface Engineering (CHTSE), Dubrovnik, Croatia, 9 - 12 June 2009, pp.351-358
- XXVII. Investigating the Influence Of Quenching Conditions, Diameter and Material Inhomogeneity on Distortion of Steel Shafts**
Şimşir C., Maradit B., Lübben T., Gür C. H.
European Congress on Advanced Materials (EUROMAT), Glasgow, England, 01 January 2009
- XXVIII. A new framework for simulation of heat treatments**
ŞİMŞİR C., GÜR C. H.
2nd International Conference on Distortion Engineering (IDE2008), Bremen, Germany, 17 - 19 September 2008, pp.471-479
- XXIX. Finite element investigation of the effect of hardening behavior of alloys on equal channel angular pressing performance**
Karpuz P., Simsir C., GÜR C. H. , Kim H. S.
4th International Conference on Nanomaterials by Severe Plastic Deformation, Goslar, Germany, 18 - 22 August 2008, pp.1021-1026
- XXX. Bilgisayar simülasyonu yardımıyla su verme işlemleri sonucunda çelik iş parçalarında oluşan mikroyapının ve kalıntı gerilmelerin tayini**
Şimşir C., Gür C. H.

CD Proc of 13th Int Metallurgy-Materials Cong., İstanbul, Turkey, 9 - 12 November 2006, pp.646-659

XXXI. Kalıntı Gerilmeler ve Şekil Bozulmasının Tahmini için Çeliklere Su Verme İşleminin Sonlu Eleman Yöntemi ile Simülasyonu

Şimşir C., Gür C. H.

12. Uluslararası Metalurji ve Malzeme Kongresi, İstanbul, Turkey, 28 September - 02 October 2005, pp.1753-1762

XXXII. FE Simulation of Steel Quenching to Investigate Residual Stresses and Distortion

ŞİMŞİR C., GÜR C. H.

1st International Conference on Distortion Engineering (IDE2005), Bremen, Germany, 14 - 16 September 2005, pp.407-414

Supported Projects

Şimşir C., Kaftanoğlu B., CB Strateji ve Bütçe Başkanlığı (Kalkınma Bakanlığı) Projesi, Metal Şekillendirme Mükemmeliyet Merkezi 3 Faz Projesi, 2016 - 2021

Şimşir C., İmer B., Yardımcı G., İlhan Ş., Ünlü U. C., TUBITAK Project, MİLKANAT E Sınıfı 130MW Bir Gaz Türbininde 1 Set Rotor ve 1 Set Stator 3 Kademe Türbin Kanadının Hassas Döküm Yöntemi ile Geliştirilmesi ve Üretimi, 2014 - 2020

Şimşir C., Akbulut G., Project Supported by Defense Industry, ÖRS Titanyum ve Süperalaşım Dövme Teknolojisinin Geliştirilmesi, 2016 - 2019

Şimşir C., Efe M., TUBITAK Project, Çift Fazlı Çeliklerin Yüksek Sıcaklık Ve Endüstriyel Deformasyon Hızlarında Şekillendirilebilirliği, 2015 - 2019

Şimşir C., Industrial Thesis Project, YAKIT POMPA MİLİ SEMENTASYON İŞLEMİNİN BİLGİSAYAR DESTEKLİ ANALİZİ VE OPTİMİZASYONU, 2015 - 2017

Şimşir C., Başol S., Project Supported by Defense Industry, DİLEK Titanyum Alaşımların Süperplastik Şekillendirilmesi, 2014 - 2017

Şimşir C., Tur K., Tozlu İ., TUBITAK Project, TCDD İhtiyacı Mantarı Sertleştirilmiş Raylar R350 HT için Yerli Üretim Teknolojisinin Geliştirilmesi ve Üretimi, 2013 - 2017

Şimşir C., Other Supported Projects, FEM FORGING Project 2012 1 ES1 LE005 48343 Leonardo da Vinci Transfer of Innovation Türkiye Yürütücüsü Proje Koordinatörlüğü İspanya, 2012 - 2015

Şimşir C., Industrial Thesis Project, İnce Rulman Bileziklerindeki Su Verme Sürecinin Simülasyon Destekli Analiziyle Isıl İşlem Çarpımlarının Azaltılması, 2012 - 2015

Şimşir C., Tekkaya A. E., CB Strateji ve Bütçe Başkanlığı (Kalkınma Bakanlığı) Projesi, Metal Şekillendirme Mükemmeliyet Merkezi 2 Faz Projesi Yürütme Kurulu Başkan Yardımcısı, 2012 - 2015

Şimşir C., Kaftanoğlu B., BOREN, Ulusal Bor Araştırma Enstitüsü Projesi, BOREN Bor Nitrür Kaplama Yetkinlik Merkezi Altyapı Projesi Görev Yürütme Kurulu Üyesi, 2012 - 2014

Şimşir C., Tekkaya A. E., CB Strateji ve Bütçe Başkanlığı (Kalkınma Bakanlığı) Projesi, Metal Şekillendirme Mükemmeliyet Merkezi, 2008 - 2010

Citations

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