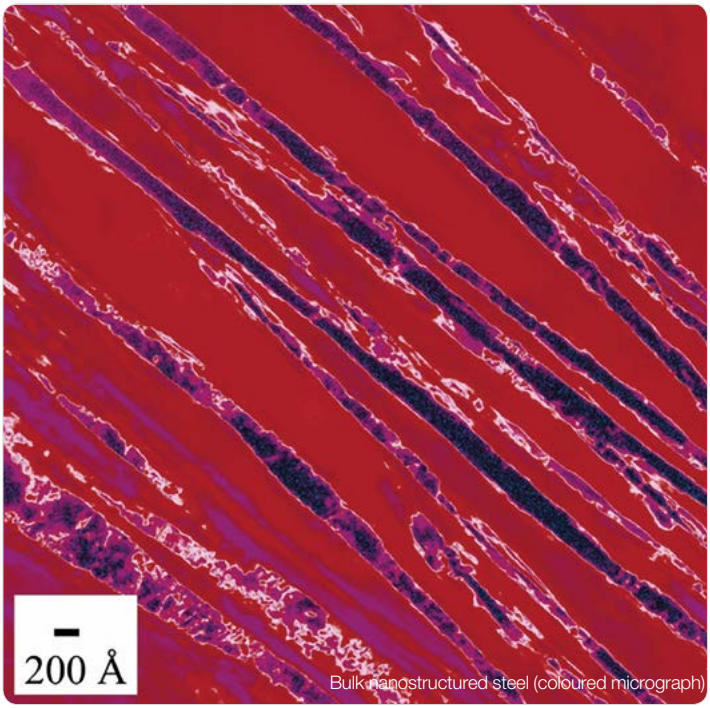


Bulk nanostructured steel (coloured micrograph)

AWT
Arbeitsgemeinschaft
Wärmebehandlung + Werkstofftechnik e.V.

Bainite - from nano to macro

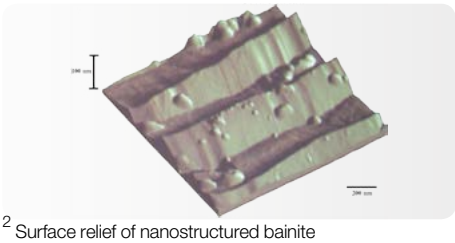
Symposium on science and application of bainite

1/2 of June 2017

Honouring
Professor Sir Harshad K. D. H. Bhadeshia

Austausch. Wissen. Technik.

Today the knowledge about mechanisms and kinetics of bainite formation has expanded significantly for continuous and isothermal process control as well, and a lot of components sees bainitic heat treatment in practice.
The research around this fascinating steel microstructure for years is bound to the name of an outstanding metallurgist, Professor Sir Harshad K. D. H. Bhadeshia, Tata Professor for Metallurgy at the University Cambridge, UK, Director of the SKF University Technology Center and Professor for Computational Metallurgy at Pohang University of Science and Technology, Korea. His book on “Bainite in Steels” still is a must to all heat treaters in science and industry and his “super-bainite” demonstrates how understanding the kinetics can lead to new and exciting microstructures and processes. Honouring this world-renowned researcher the „Arbeitsgemeinschaft Wärmebehandlung und Werkstofftechnik e. V. (AWT)“ from 1-2 June 2017 organizes a symposium on „bainite“ and continues with former AWT Technical Symposia, which used to address one special heat treatment topic.
Besides presentations on scientific fundamentals on the continuous and isothermal formation of bainite, possibilities of modelling and simulation and latest steel developments, practical application and technical equipment for bainitic heat treatment are within the scope of this symposium. Especially in recent years remarkable success was achieved with newly developed bainitic steels for hot forming, which reveal an interesting potential for lightweight design. Non-destructive methods for in-situ monitoring of the transformation allow efficient, also multi-step process sequences to run the time consuming isothermal processes in an economic and reliable way. The beneficial properties of bainitic components also will be presented. The symposium will cover continuous and isothermal bainitic treatments and also addresses the austempering of cast iron (austempered ductile iron - ADI).


[2] Surface relief of nanostructured bainite

Granting of the „Adolf-Martens-Medal“ of AWT

At the bainite symposium the renowned „Adolf-Martens-Medal“ of AWT will be granted to the person to be honoured: Professor Sir Harshad K. D. H. Bhadeshia, Tata Professor for Metallurgy at the University Cambridge, UK, Director of the SKF University Technology Center and Professor for Computational Metallurgy at Pohang University of Science and Technology, Korea.

This symposium with excellent speakers and in-depth lectures will comprehensively provide you with „state-of-the-art“ of research and application on this very special microstructure, and at the same time honouring a brilliant scientist, who rendered outstanding service on the research of bainite.

Chairmen of the symposium

The chairmen of the symposium, Prof. Dr.-Ing. Hans-Werner Zoch, Stiftung Institut für Werkstofftechnik (IWT), Bremen and Dr.-Ing. Michael Lohrmann, ZF Friedrichshafen AG, will lead you through exciting hours of bainite expertise.


Prof. Dr.-Ing. Hans-Werner Zoch


Dr.-Ing. Michael Lohrmann

The symposium provides participants with the opportunity to get an insight in the most recent developments regarding bainite fundamentals and microstructure, the process of bainitic treatment and its control and properties of bainitic heat treated parts.

Programme*, 1 June 2017

Time	Subject	Speaker	Institute/Company
10.30-10.45	Welcome, Introduction and Laudation	Dr.-Ing. Michael Lohrmann; Prof. Dr.-Ing. Hans-Werner Zoch	ZF Friedrichshafen AG, Stiftung Institut für Werkstofftechnik
10.45-11.00	Granting of the „Adolf-Martens-Medal“ of AWT to H. Bhadeshia	Dr.-Ing. Michael Lohrmann	ZF Friedrichshafen AG
Fundamentals and new findings on bainite mechanisms			
11.00-12.00	The atomic mechanism of the bainite transformation	Prof. Sir Harshad K. D. H. Bhadeshia	University Cambridge
12.00-12.25	New insights into carbon distribution in bainitic ferrite	Dr. Francisca G. Caballero	Centro Nacional de Investigaciones Metalurgicas (CENIM)
12.25-14.00	Lunch Break		
Steels and steel developments for bainitizing and their characterization			
14.00-14.35	Microalloyed engineering steels with improved performance	Prof. Dr.-Ing. Wolfgang Bleck	Department of Ferrous Metallurgy, RWTH Aachen
14.35-15.00	Transformation kinetics, wear and fatigue of nanostructured bainite	Dr. Thomas Sourmail	ASCO INDUSTRIES SAS (Ascometal)
15.00-15.25	Taming the bainite for use in bright bar applications	Dr. Hans Roelofs	Swiss Steel AG
15:25-15.50	Development and application of high strength bainitic forging steel	Hans-Henning Dickert	Georgsmarienhütte GmbH
15.50-16.30	Coffee Break		
16.30-16.55	Bainitic steel for stable processes	Dr.-Ing. Till Schneiders	Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG
Heat treatment processes and properties of bainitic components			
16.55-17.20	Bearings with bainitic hardened rings for demanding applications	Dr.-Ing. Werner Trojahn	Schaeffler Technologies GmbH & Co. KG
17.20-17.45	Bainitic transformation and combination process	Walter Datchary	AB SKF
19.00 -	Conference Dinner at Kurhaus Wiesbaden, Wintergarten		

*All programmes may be subject to change without prior notice. Printing errors, mistakes and amendments reserved.

Programme*, 2 June 2017

Time	Subject	Speaker	Institute/Company
08.30-08.55	Development of a two-step bainitizing procedure to enhance fatigue strength economically	Prof. Dr.-Ing. habil. Brigitte Clausen	Stiftung Institut für Werkstofftechnik
08.55-09.20	CarboBain: case hardening by carbo-austempering – a systematic evaluation of transformation kinetics, microstructure and residual stresses	Dr.-Ing. Matthias Steinbacher	Stiftung Institut für Werkstofftechnik
Process equipment and control			
09.20-09.45	Process technology and plant design for austempering	Dr.-Ing. Herwig Altena	Aichelin Holding GmbH
09.45-10.10.	Batch furnace with integrated salt quench for austempering	Dipl.-Ing. Herbert Hans	Ipsen International GmbH
10.10-10.40	Coffee Break		
10.40-11.05	Dry bainitizing – a clean approach to achieve bainitic microstructures	Dr.-Ing. Voker Heuer	ALD Vacuum Technologies GmbH
11.05-11.30	Dry austempering: a new technology for future automotive requirements	Dipl.-Ing. Eric Dabrock	Robert Bosch GmbH
11.30-11.55	New bainite sensor technology allows for a detailed view on material transformation	Dr.-Ing. Heinrich Klümper-Westkamp	Stiftung Institut für Werkstofftechnik
11.55-12.20	In-line application of bainite sensor technology for characterizing material structure transformation during cooling	Dr.-Ing. Wilfried Reimche	Institut für Werkstoffkunde, Leibniz Universität Hannover
12.20-13.40	Lunch Break		
13.40-14.05	In-situ investigation of bainite formation with fast X-ray diffraction (iXRD)	Andreas Kopp	Hochschule Aalen - Institut für Materialforschung
Fundamentals and simulation of bainite transformation			
14.05-14.30	Bainitic transformation analysis in a carbon and nitrogen enriched low alloyed steel : kinetics and microstructures	Dr. Julien Da Costa Teixeira	Institut Jean Lamour; University of Lorraine, Nancy
14.30-14.55	Modeling of bainitic transformations under high stresses	Dr.-Ing. Martin Hunkel	Stiftung Institut für Werkstofftechnik
Ausferritizing of cast iron (Austempered ductile iron - ADI)			
14.55-15.20	Virtual optimization of process and material properties for ADI	Dipl.-Ing. Erik Hepp	MAGMA Gießereitechnologie GmbH
15.20-15.55	Is ADI with bainite optimized?	Arron Rimmer Ph. D., Dr. Eike Wüller	ADI Treatments, Siemens Mechanical Drives
15.55-16.15	Conclusion (Dr.-Ing. M. Lohrmann, ZF Friedrichshafen AG, Prof. Dr.-Ing. H.-W. Zoch, Stiftung Institut für Werkstofftechnik)		
16.15	End of the Event		

Date and venue of the symposium

Thursday, 1 of June 2017, 10:30 – 17:45 Uhr
Friday, 2 of June 2017, 8:30 – 16:45 Uhr

Dorint Hotel Pallas Wiesbaden

AWT Conference Manager: Mrs. Hella Dietz, h.dietz@awt-online.org

Online Registration

Organiser: Arbeitsgemeinschaft Wärmebehandlung + Werkstofftechnik e. V. (AWT), Phone: +49 (0) 421-5229339, http://www.awt-online.org; AWT_Flyer_Bainite_2017; Picture on page 1: bulk nanostructured steel (coloured micrograph) Source: Garcia-Mateo, Caballero, Bhadeshia