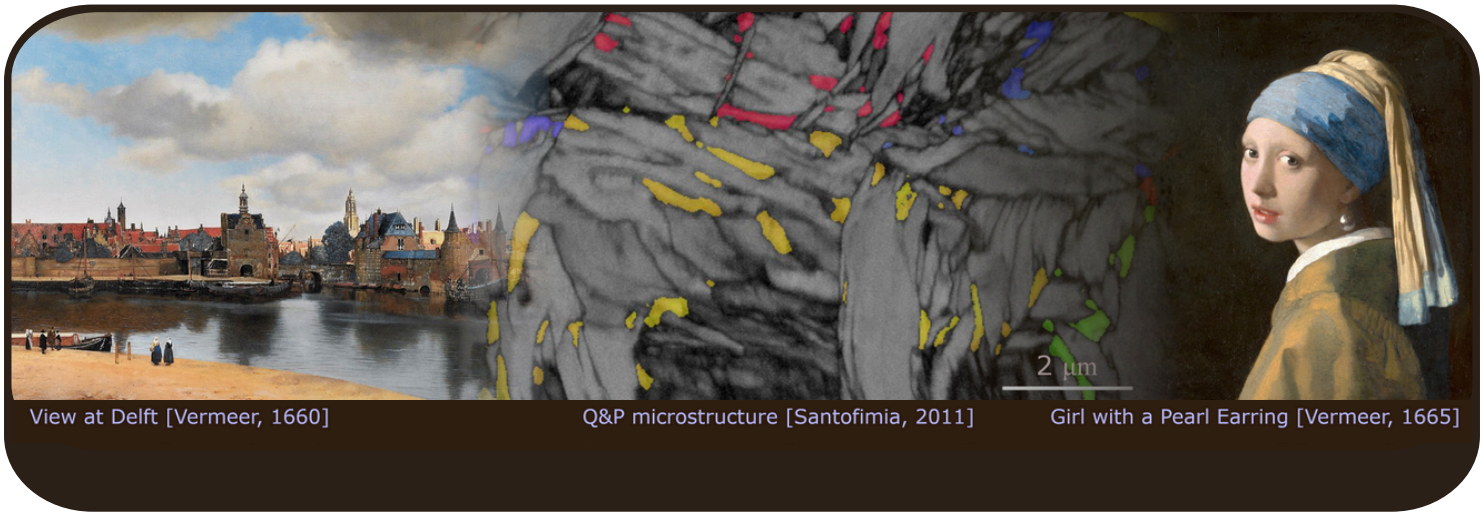
PTM 2025
SCIENTIFIC PROGRAMME



View at Delft [Vermeer, 1660] Q&P microstructure [Santofimia, 2011] Girl with a Pearl Earring [Vermeer, 1665]

The 9th International Conference on Solid-Solid Phase Transformations in Inorganic Materials

7 - 11 July 2025 | Delft, The Netherlands

Welcome to PTM2025

Scientific conferences represent knowledge sharing and mutual understanding. In the turbulent world we are living in, these unfortunately appear to be rare attributes. Still, we wish that this conference not only serves to its core values, but will also be an event of tolerance and dialogue. With this wish, we are excited to present the scientific programme of the 9th International Conference on Solid-Solid Phase Transformations in Inorganic Materials, PTM 2025, which will be held from 7 to 11 July 2025 at the Aula of Delft University of Technology, Delft, the Netherlands. The programme includes 42 sessions, six keynote lectures, the Hillert-Cahn lecture, the Aaronson Award ceremony and a poster session. There are over 200 registered delegates.

The conference aims at exchanging high-level fundamental knowledge on phase transformations in inorganic materials, i.e. the microscopic processes by which the microstructure can be tailored and thus by which the properties and performance of the material can be optimised. Although many types of materials have been used for centuries, the in-depth knowledge on these microstructural processes is still far from complete and still strongly developing, for instance through experimental observations at ever smaller length and time scales. Such observations and physics-based model development are mutually stimulating and lead to the design of new materials with enhanced performance. Fundamental science as developed and disseminated by the PTM conferences forms the basis for the materials transition towards sustainable production and circularity.

We hope that you will be inspired by the conference, catching up with old colleagues and making new contacts. There will be excursions to the Mauritshuis museum in The Hague with seventeenth-century paintings of Vermeer, the Dutch windmills in Kinderdijk and the war monument Oranjehotel in Scheveningen on Wednesday 9 July in the afternoon. The conference dinner will be held at the beach of Scheveningen on Thursday 10 July.

We are grateful for the sponsorship that we received from Groeien met Groen Staal, ThermoCalc, CAMECA, Access/Micress, Tata Steel, and Journal of alloys and compounds of Elsevier. We are grateful for the support of the department of Materials Science and Engineering of TU Delft and our fellow members of the PTM 2025 Scientific Committee: Annika Borgenstam (KTH Royal Institute of Technology), Leo Kestens (Ghent University), Joakim Odqvist (KTH Royal Institute of Technology), Jilt Sietsma (Delft University of Technology).

We look forward to meeting you in Delft,

Erik Offerman and Maria Santofimia, Conference Chairs

Monday, July 7

08:45 – 9:00 Welcome, by Erik Offerman and Maria Santofimia.

09:00 – 09:45 Plenary 1, Auditorium, chaired by Maria Santofimia.

Solid-state phase transformations during metal additive manufacturing: A case study on laser powder bed fusion of tool steels. *Francisca García Caballero, CENIM-CSIC, Madrid, Spain*.

09:50 – 11:20 Sessions M1

M1a.1-4: Ferrite formation in steels (I), Auditorium, chaired by Alexis Deschamps.

09:50 Invited. Combinatorial experiments for fast mapping of the austenite-to-ferrite transformation kinetics. *Hugo Van Landeghem. SIMaP, Grenoble, France*.

10:20 Ferrite and austenite transformation in Fe-N based alloys. *Tadashi Furuhara, Tohoku University, Sendai, Japan*.

10:40 Unravelling the kinetics of austenite to acicular ferrite transformation in a low alloy steel during continuous cooling using a physical-based model. *Antoine Kieffer, EDF - R&D, Moret sur Loing, France*.

11:00 The effects of material heterogeneities on diffusional ferrite formation. *Martin Strangwood, University of Warwick, Coventry, United Kingdom*.

M1b.1-4: Ti alloys (I), Senaatszaal, chaired by Moukrane Dehmas.

09:50 Invited. Exploring the strength-ductility space of α-β Ti alloys through a quenching and partitioning approach. *Stéphane Godet, Université Libre de Bruxelles, Brussels, Belgium*.

10:20 Effect of electric current on phase diagram of pure titanium. *Heung Nam Han, Seoul National University, Seoul, South Korea*.

10:40 Contribution of the ω/β interfaces to the electrical resistivity of a Ti-15Mo β-metastable titanium alloy. *Benoît Denand, Université de Lorraine - CNRS / Institut Jean Lamour, Nancy, France*.

11:00 Invited. Non-conserved migration mode of semicoherent interfaces during precipitate growth. *WenZheng Zhang, Tsinghua University, Beijing, China*.

M1c.1-4: Additive manufacturing (I), Frans van Hasseltzaal, chaired by Felipe Castro Cerda.

09:50 Invited. 3D-printed heterostructure copper-iron composite manufactured by direct energy deposition. *Jairo Alberto Muñoz Bolaños, Polytechnic University of Catalunya, Barcelona, Spain*.

10:20 Robust design of additive manufacturable Ni superalloys. *Hao Yu, Northeastern University, Shenyang, China*.

10:40 In-situ lamination during 3D printing of high silicon steel. *Soran Birosca, University of Portsmouth, Portsmouth, United Kingdom*.

11:00 Additive manufacturing of G91 alloy by LPBF: parameter optimisation, microstructural and mechanical characterisation. *David San Martin, CENIM-CSIC, Madrid, Spain*.

11:20 – 11:50 Break, Foyer

11:50 – 13:10 Sessions M2

M2a.1-4: Ferrite formation in steels (II), Auditorium, chaired by Tadashi Furuhara.

11:50 Linking the Avrami model parameters for diffusional phase transformation kinetics for Fe-C-Mn alloys to composition, thermodynamic input, cooling conditions and 3D microstructural input. *Sybrand van der Zwaag, Delft University of Technology, the Netherlands*.

12:10 Coupled solute-drag effect in Fe-C-Mn V alloy. *M.G. Mecozzi, Delft University of Technology, the Netherlands*.

12:30 Formation of nodular ferrite with interphase precipitation in vanadium-bearing steels. *Zhenqiang Wang, Harbin Engineering University, China*.

12:50 Quantitative evaluation of energy dissipation at migrating interface during ferrite transformation in Fe-C-Mn and Fe-C-Ni alloys. *Kanon Sato, Tohoku University, Sendai, Japan*.

M2b.1-4: Ti alloys (II), Senaatszaal, chaired by Stéphane Godet.

11:50 Novel shuffle transformations in metastable β titanium alloys. *Yufeng Zheng, University of North Texas, Denton, United States*.

12:10 Effect of mechanical loading and temperature on the formation of stress-induced martensitic transformation in Ti-6242 titanium alloys. *Muritala Arowolo, CIRIMAT, Toulouse INP, Université de Toulouse, CNRS, France*.

12:30 Phase transformation kinetics during rapid heating of Ti-5553 titanium alloy with different initial microstructures. *M. Dehmas, CIRIMAT, Toulouse, France*.

12:50 Alloy design of α+β titanium alloys to achieve high damage tolerance through increased the work-hardening. *Harena Rakotozafy, Université Libre de Bruxelles, Brussels, Belgium*.

M2c.1-2: Additive manufacturing (II), Frans van Hasseltzaal, chaired by José María Cabrera.

11:50 AlCrFeMnNi: the next-generation FCC high-entropy alloys processed by additive manufacturing for nuclear structural applications. *R. Castellote-Alvarez, CENIM-CSIC, Madrid, Spain*.

12:10 Role of massive precipitation on multiple deformation mechanisms of additively manufactured FeCrNiAlTi alloy. *Xiaopei Wang, University of Science and Technology Beijing, China*.

13:10 – 14:30 Lunch, Foyer

14:30 – 16:10 Sessions M3

M3a.1-4: Ferrite formation in steels (III), Auditorium, chaired by Hao Chen.

14:30 In-situ investigations on the dynamic transformation in steel near the Ae3. *Arina DeBoer, McMaster University, Hamilton, Canada*.

14:50 Development of a machine learning model to predict phase transformation(s) from dilatometer data for application to laminar cooling of hot rolled steel. *J. Barry Wiskel, University of Alberta, Edmonton, Canada*.

15:10 Phase-field modelling of α/γ interface migration under non-equilibrium conditions in Fe-C-Mn alloy. *Luyao Fan, Tohoku University, Sendai, Japan*.

15:30 So long and thanks for the memory: non-diffusive interface behaviour in the presence of solute. *Chad Sinclair, University of British Columbia, Vancouver, Canada*.

M3b.1-5: Ti alloys (III), Senaatszaal, chaired by Sophie Primig.

14:30 In situ observations of microstructure evolution in Ti-6Al-4V fabricated by micro-laser powder bed fusion upon annealing. *Dayong An, Shanghai Jiao Tong University, Shanghai, China*.

14:50 New phase transition mechanism for the multiscale precipitation design in titanium alloys and performance enhancement. *Dong Wang, Xi'an Jiaotong University, Xi'an, China*.

15:10 Nanotwinned α precipitates in β titanium alloys induced by variant assembly during β to α phase transformation. *Jiaqiang Chang, Centre for Adaptive System Engineering, Shanghai, China*.

15:30 Novel high-temperature Ti-alloy for enhanced wire-based directed energy deposition applications. *Ehsan Farabi, UNSW Sydney, Australia*.

15:50 Unveil the kinetics of eutectoid decomposition in additive manufactured Ti-8.5Cu alloy using in situ synchrotron X-ray diffraction. *Yunhui Chen, RMIT University, Melbourne, Australia*.

M3c.1-5: Additive manufacturing (III), Frans van Hasseltzaal, chaired by David San Martín.

14:30 Refining the microstructure of a layered stainless steel by selective laser. *Lucia Morales-Rivas, CENIM-CSIC, Madrid, Spain*.

14:50 Phase-field simulation to elucidate residual ferrite fractions in wire-based additive manufacturing of 316L. *Markus Apel, Access e.V., Aachen, Germany*.

15:10 Delta-ferrite to austenite phase transformation pathways and mechanical properties in 2205 duplex stainless steels manufactured via laser powder bed fusion. *Xinyi He, School of Materials Science & Engineering, UNSW Sydney, Australia*.

15:30 Multiscale microstructure of an Al(x)Fe(1-x) alloy manufactured by the L-PBF process. *Yann Le Bouar, Université Paris-Saclay, ONERA, CNRS, Laboratoire d'Etude des Microstructures, Châtillon, France*.

15:50 Enhancing additive manufacturing of recycled AA7075: titanium-coated powders for crack-free aerospace components. *Romain Giaux, Université Libre de Bruxelles, Brussels, Belgium*.

16:10 – 16:30 Break, Foyer

16:30 – 17:15 Plenary 2, Auditorium, chaired by Erik Offerman.

Phase transformations in chemically heterogenous steels. *Hao Chen, Tsinghua university, Beijing, China*.

Tuesday, July 8

08:30 – 09:15 Plenary 3, Auditorium, chaired by Annika Borgenstam.

Science-based Advanced Manufacturing of Metals and Alloys. *Amy J. Clarke, Los Alamos National Laboratory, Sigma Manufacturing Science Division, United States*.

09:20 – 10:50 Sessions Tu1

Tu1a.1-4: Martensite (I), Auditorium, chaired by Philippe Maugis.

09:20 Invited. Thermally activated martensite formation: an exception or the rule? *Marcel Somers, Technical University of Denmark, Kongens Lyngby, Denmark*.

09:50 Kinetics of athermal martensite formation studied by in situ high-energy synchrotron X-ray diffraction. *Daniel Dos Santos Avila, Delft University of Technology, the Netherla*nds.

10:10 Bragg-edge neutron imaging and FEM simulation of martensite phase fraction of case-hardened steel. *Clas Dahlin, Royal Institute of Technology, Stockholm, Sweden*.

10:30 Three-dimensional shape metrics for martensite from two-dimensional orientation maps. *Tuomo Nyyssönen, Swerim AB, Stockholm, Sweden*.

Tu1b.1-4: Al alloys (I), Senaatszaal, chaired by Ernst Kozeschnik.

09:20 Invited. Understanding impurity-driven precipitation kinetics in Al-Sc-Zr core-shell precipitates. *Thomas Dorin, Deakin University, Waurn Ponds, Australia*.

09:50 Understanding the competition between dynamic precipitation and dynamic dissolution in aluminium alloys. *Guillaume Crowin, CNRS-SIMaP, Grenoble, France*.

10:10 A pragmatic and robust approach for modelling mean-field precipitation kinetics in aluminium alloys during cooling and heating at moderate rates. *Robert Kahlenberg, TU Wien / Institute of Materials Science and Technology, Vienna, Austria*.

10:30 Phase-field modelling of nucleation and growth of T1 phase in Al-Cu-Li alloys. *Ali Reza Safi, Helmholtz Zentrum Hereon, Geesthacht, Germany*.

Tu1c.1-3: Plasticity, Frans van Hasseltzaal, chaired by Hans Magnusson.

09:20 Invited. Characterisation and quantification of transformation/deformation-induced disclinations in BCC and HCP metals. *Yipeng Gao, Jilin University, Changchun, China*.

09:50 Designing ultrasonic sonotrodes based on Laves phase machine learning to enhance the ultrasonic forming capability of CoNiFeCuTa High-entropy alloys. *Yuan Zheng, Beijing Jiaotong University, Beijing, China*.

10:10 Expanded austenite in 316L stainless steel: characterisation and modelling of plastic anisotropy. *Matthew Bolan, TU Bergakademie Freiberg, Germany*.

10:50 – 11:10 Break, Foyer

11:10 – 13:00 Sessions Tu2

Tu2a.1-5: Martensite (II), Auditorium, by Hatem Zurob.

11:10 Invited. Kinetics of ordering transitions and Bain variant selection in Fe-C martensite. *Philippe Maugis, Aix-Marseille University, Marseille, France*.

11:40 The hidden austenite symmetries behind the type I and type II twins of martensite variants. *Cyril Cayron, Ecole Polytechique Fédérale de Lausanne, Neuchatel, Switzerland*.

12:00 Effect of different quenching methods on the microstructure and mechanical properties of 30MnB5NbTi. *Xinwei Wang, University of Science and Technology Beijing, China*.

12:20 A discovery of new metastable ω phase formed in coarse-grained medium manganese steel during quenching. *Haiwen Luo, University of Science and Technology Beijing, China*.

12:40 Cooperative interfaces migration during hcp<->fcc transformation in cobalt. *Xinfu Gu, University of Science and Technology Beijing, China*.

Tu2b.1-5: Al alloys (II), Senaatszaal, chair to be determined.

11:10 Invited. Solute clustering and early-stage precipitation in Al-Mg-Si alloys. *Chunan Li, Norwegian University of Science and Technology, Trondheim, Norway*.

11:40 Formation and dissolution of the T-phase in a novel Al-Mg-Zn(-Cu) crossover alloy for automotive sheets. *Georg Falkinger, AMAG rolling GmbH, Ranshofen, Austria*.

12:00 Impact of atomic couples and pairs on quenched-in vacancies in Al-Mg-Si-Cu alloys. *Ya Li, Materials Science and Technology, TU Wien, Austria*.

12:20 Geometrical analysis of the coherency of η/Al heterointerfaces in Al-Zn-Mg alloy. *Seiichiro Il, National Institute for Materials Science, Tsukuba, Japan*.

12:40 Evolution of nanostructures during slow quenching in an Al-Zn-Mg alloy and their effect on age-hardening. *Mami Mihara-Narita, Nagoya Institute of Technology, Japan*.

Tu2c.1-4: Materials for energy (I), Frans van Hasseltzaal, chaired by Niels van Dijk.

11:10 Invited. TRIP effect in zirconia: atomistic simulations and in-situ experiments. *Tristan Albaret, Institut Lumière Matière, Villeurbanne, France*.

11:40 Atomistic modelling of microstructure evolution in Cu-Mo nano-multilayers at elevated temperatures. *Anastasiia Titova, Université de Rouen Normandie, Saint-Étienne-du-Rouvray, France*.

12:00 Coarse Cr-rich carbides precipitates evolution during consolidation, as consolidated and after thermal ageing in ODS ferritic and ferritic/martensitic steels. *Emilien Guy, Université Paris-Saclay, France*.

13:00 – 14:00 Lunch, Foyer

14:00 – 15:40 Sessions Tu3

Tu3a.1-5: Martensite (III), Auditorium, chaired by Marcel Somers.

14:00 Modelling T_0, B_s and M_s temperatures of steels. *Stefan van Bohemen, Tata Steel Research and Development, IJmuiden, the Netherlands*.

14:20 Martensitic transformations in 17-4 PH stainless steel at sub-zero Celsius temperatures. *Basit Ali, Technical University of Denmark, Kgs. Lyngby, Denmark*.

14:40 Strain glass transition — a frustrated martensitic transformation: origin and features studied through multi-scale modeling. *Liang Chuanxin, Xi'an Jiaotong University, Xi'an, China*.

15:00 A generic model for interface energy in austenite/ε-martensite: a comparable empirical and machine-learning study. *Hussein Farahani, Tata Steel Research & Development, IJmuiden, the Netherlands*.

15:20 Two-step B2→R→B19' continuous transition in NiTi shape memory alloy with low-fatigue large elastocaloric effect. *Qianglong Liang, Xi'an Jiaotong University, Xi'an, China*.

Tu3b.1-5: Al alloys (III), Senaatszaal, chaired by Yanjun Li.

14:00 Process chain-dependent microstructure and strength development of an AlMnFeMgSi(Zr) wrought alloy. *Jette Broer, University of Rostock, Germany*.

14:20 Eutectic spheroidisation in AlMg5Si2Mn-type casting alloys containing lithium. *Viktoriya Boyko, University of Rostock, Germany*.

14:40 Modelling the precipitate transformation of Mg-Si-rich clusters into Mg_5Si_6 β'' in Al-Mg-Si aluminium alloys. *Ernst Kozeschnik, TU Wien, Austria*.

15:00 High-throughput characterisation of composition-dependent precipitation kinetics studied in graded Al-Zn-Mg-Cu alloys. *Thomas Pejot, SIMaP University of Grenoble Alpes, France*.

15:20 Solid solutions decomposition, nucleation and early stages of precipitation in aluminium alloys unravelled by small-angle X-ray scattering. *Frederic De Geuser, Univ. Grenoble Alpes, CNRS, Grenoble INP, SIMAP, France*.

Tu3c.1-4: Materials for energy (II), Frans van Hasseltzaal, chaired by Matthias Militzer.

14:00 Thermal stability of non-equiatomic CrFeNiMn high-entropy alloys alloyed with Al and Al/Ti: microstructural and mechanical characterisation. *David San Martin, CENIM-CSIC, Madrid, Spain*.

14:20 Computational study of zirconium phase change using phase-field modelling. *Jiho Kim, Kyung Hee University, Yongin, South Korea*.

14:40 Phase-field modelling of elastochemical effects at the Sn anode of lithium-ion batteries. *Anil Kunwar, Silesian University of Technology, Gliwice, Poland*.

15:00 Phase-field modelling of morphology evolution of intergranular and intragranular hydrides in polycrystalline zirconium. *Wooseob Shin, Kyung Hee University, Yongin-si, South Korea*.

15:40 – 16:00 Break, Foyer

16:00 – 17:00 Sessions Tu4

Tu4a.1-3: Martensite (IV), Auditorium, chaired by Haiwen Luo.

16:00 Austenite stability in medium manganese steels. *Dilan Muñoz. Universidad de Santiago de Chile, Chile.*

16:20 Martensitic transformation in metastable austenitic stainless steel during electrochemical process. *Junyoung Chae, Seoul National University, South Korea*.

16:40 Deformation induced martensite transformation in chemically heterogeneous austenite: a 3D Molecular Dynamics study. *Jun Chai, Tsinghua University, China (online).*

Tu4b.1-3: Al alloys (IV), Senaatszaal, chaired by Cyril Cayron.

16:00 High throughput study of long-term thermal ageing of precipitation hardened aluminium alloys. *Alexis Deschamps, Grenoble Institute of Technology - UGA, Grenoble, France*.

16:20 Dynamic room-temperature precipitation of 7XXX aluminium. *Adam Bouayoune, INSA , Lyon, France*.

16:40 Impact of recycled contents in 6xxx series aluminium alloys: studying and modelling precipitation. *Seyyed Ezzatollah Moosavi, Epfl, Laussane, Switzerland*.

Tu4c.1-3: Magnetic effects, Frans van Hasseltzaal, chaired by Jaiprakash Gautam.

16:00 Concise magnetic model for thermodynamic calculations of iron from 0 to 1800 K. *Stefan van Bohemen, Tata Steel R&D, the Netherlands.*

16:20 Effect of pre-straining on magnetic ageing of Fe-Si steels. *Ajay Kumar Jagannath Rao, Arts et Métiers Institute of Technology, Lille, France*.

16:40 Nanoscale investigation of the impact of high magnetic field on the 15-5 PH stainless steel. *Sonia Guehairia, KTH Royal Institute of Technology, Stockholm, Sweden*.

17:05 – 17:50 Plenary 4, Auditorium, chaired by Leo Kestens.

ALEMI: 25 Years of collaborative research on alloying element effects on migrating interfaces. *Hatem Zurob, McMaster University, Hamilton, Canada*.

Wednesday, July 9

08:30 – 09:15 Plenary 5, Auditorium, chaired by Leo Kestens.

Strategies for designing sustainable steels: leveraging chemical heterogeneity, atomic clustering, nanoscale precipitation, and phase stability. *Elena Pereloma, University of Wollongong, Australia*.

09:20 – 11:10 Sessions W1

W1a.1-5: Bainite formation (I), Auditorium, chaired by Francisca G. Caballero.

09:20 Invited. Effect of deformation on bainitic transformation. *I-E Benrabah, Université de Lorraine, CNRS, IJL, Nancy F-54000, France*.

09:50 Microstructural evolution and crystallographic metrics in bainitic and martensitic steels. *Adam Ståhlkrantz, Swerim AB, Stockholm, Sweden*.

10:10 Bainitic and reverse transformation in Fe-Ni-Al-Cu-C steel: in-situ TEM/STEM observation of structure evolution. *Aleksandra Królicka, Wrocław University of Science and Technology, Poland*.

10:30 In situ study of carbide-free bainite transformation kinetics. *Philipp Retzl, TU Wien, Vienna, Austria*.

10:50 HE-XRD study of the effect of substitutional alloying on bainitic transformation kinetics in continuous cooling. *Marion Bregeault, Grenoble INP, SIMAP, France*.

W1b.1-3: Recrystallisation and grain growth (I), Senaatszaal, chaired by Jurij Sidor.

09:20 Invited. Variant selection and crystallographic texture evolution during phase transformation in low carbon steels. *Tuan Nguyen-Minh, Ghent University, Belgium*.

09:50 Dynamic recrystallisation of Zn-Mn-Ca biodegradable alloy during cold rolling. *Mahmood Fatemi, Universitat Politècnica de Catalunya (UPC), Barcelona, Spain*.

10:10 Texture control through phase transformation in low-carbon steel sheet. *Leo Kestens, Ghent University, Belgium*.

W1c.1-4: Advanced experimentation (I), Frans van Hasseltzaal, chaired by Yan Ma.

09:20 Invited. Linking defects and 3D chemical fields of composition by in situ combination of atom probe tomography and transmission electron microscopy. *Williams Lefebvre, Univ Rouen Normandie, INSA Rouen Normandie, CNRS, Normandie Univ, France*.

09:50 Phase stability of CoCrFeMnNi alloy through crystallisation of free-standing amorphous think film. *Abira Rashid, Indian Institute of Technology, Gandhinagar, Gujarat, India*.

10:10 Optimisation of duplex medium manganese steel microstructures by high-throughput characterisation methods. *Olha Nakonechna, IJL, CNRS, Université de Lorraine, Nancy, France*.

10:30 In-situ measurement of austenite conditioning and decomposition. *Minghui Lin, The University of British Columbia, Vancouver, Canada*.

11:10 – 11:30 Break, Foyer

11:30 – 12:50 Sessions W2

W2a.1-4: Bainite formation (II), Auditorium, chaired by Daniel dos Santos Avila.

11:30 Phase-field simulation framework for modelling martensite and bainite formation in steel. *Oleg Shchyglo, Ruhr-Universität Bochum, Bochum, Germany*.

11:50 Phase-field simulations of bainite transformation in steels. *Ashish Dhole, The University of British Columbia, Vancouver, Canada*.

12:10 Phase-field approach to simulate bainitic transformation in steel. *Muhammad Adil Ali, Ruhr-Universität Bochum, Bochum, Germany*.

12:30 Modelling of the diffusional-displacive bainitic transformation. *Zongbiao Dai, Xi'an Jiaotong University, Xi'an, China*.

W2b.1-4: Recrystallisation and grain growth (II), Senaatszaal, chaired by Leo Kestens.

11:30 New insights in understanding the interaction between recrystallisation and phase transformation during intercritical annealing of DP steels. *Clélia Couchet, Université de Lorraine, Nancy, France*.

11:50 Ferrite recrystallisation characterisation by isolated diffraction spot tracking during high-energy X-ray diffraction experiments. *Clélia Couchet, Université de Lorraine, Nancy, France*.

12:10 Mesoscopic transformation in aluminium alloys during deformation and recrystallisation. *Jurij Sidor, ELTE Eötvös Loránd University (ELTE), Szombathely, Hungary*.

12:30 Recrystallisation and recovery during relaxation trials with in-situ microstructure measurements. *Hans Magnusson, Swerim, Stockholm, Sweden*.

W2c.1-4: Advanced experimentation (II), Frans van Hasseltzaal, chaired by Wenzheng Zhang.

11:30 Mapping of transformation-induced elastic strains by TEM. *Arthur Després, SIMaP - Grenoble INP, Grenoble, France*.

11:50 EBSD and TKD study of microstructure evolution in NiTi alloys. *Junfeng Xiao, Ecole Polytechnique Fédérale de Lausanne (EPFL), Neuchatel, Switzerland*.

12:10 Evolution of phase transformations and lattice defects in steels: an X-ray diffraction and modelling perspective. *Ernst Gamsjäger, Montanuniversität Leoben / Chair of Mechanics, Leoben, Austria*.

12:30 Room-temperature recrystallisation of Mo induced by nanoindentation. *Feitao Li, Technion – Israel Institute of Technology, Haifa, Israel. (online).*

12:50 – 14:00 Lunch, Foyer

Thursday, July 10

08:30 – 09:15 Plenary 6, Auditorium, Hillert-Cahn Lecture, chaired by Erik Offerman.

Precipitate growth and spinodal decomposition in AlCrFeNi alloys studied through phase-field simulations. *Nele Moelans, KU Leuven, Belgium*.

09:20 – 10:50 Sessions Th1

Th1a.1-4: Precipitation (I), Auditorium, chaired by Erik Offerman.

09:20 Invited. In-situ study of discontinuous precipitation in Mg-Al. *Joseph Robson, University of Manchester, United Kingdom*.

09:50 Electropulsing induced ultrafast phase transformation in non-equilibrium conditions. *Yuanshen Qi, Guangdong Technion - Israel Institute of Technology, Shantou, China*.

10:10 Size focusing of core-shell precipitates leading to near-uniform size distribution. *Soumya Mishra, Indian Institute of Science (IISc), Bengaluru, India*.

10:30 Direct evidence and kinetics of Cu precipitation in the austenite phase of a maraging stainless steel. *Tao Zhou, KTH Royal Institute of Technology, Stockholm, Sweden*.

Th1b.1-3: Q&P (martensite/austenite) (I), Senaatszaal, chaired by Maria Santofimia.

09:20 Invited. Microstructure evolution during quenching & partitioning and intercritical annealing combined with press-hardening of medium-Mn steels. *Ulrich Krupp, IEHK Steel Institute, RWTH Aachen University, Aachen, Germany*.

9:50 Critical insights into the contributions to carbon enrichment of austenite and related competitive reactions during quenching and partitioning treatments with various Mn contents. *Eve-Line Cadotte, 4MAT, Materials Engineering, Characterization, Processing and Recycling, University Bruxelles, Belgium*.

10:10 Martensite/austenite interface migration and elemental partitioning in a high-temperature Q&P processed medium Mn steel. *Carola Celada Casero, CENIM-CSIC, Madrid, Spain*.

Th1c.1-4: Ordering, Frans van Hasseltzaal, chaired by Xiaoqin Ou.

09:20 Invited. Statistical fluctuations, clustering and short-range ordering: a CALPHAD based thermodynamics perspective. *Alisson Kwiatkowski da Silva, Thermo-Calc Software AB, Solna, Sweden*.

09:50 On ordering on BCC and O-phase. *Suzana Fries, Ruhr University Bochum, Bochum, Germany*.

10:10 Order-disorder phase transformation makes Ni-Pt nanoparticles spin and dance. *E. Rabkin, Technion - Israel Institute of Technology, Haifa, Israel*.

10:30 Atomistic simulations of diffusion properties and ordering kinetics in Fe-Ni alloys. *Zexin Fang, Université Paris-Saclay, Gif-sur-Yvette, France*.

10:50 – 11:10 Break, Foyer

11:10 – 13:00 Session Th2

Th2a.1-5: Precipitation (II), Auditorium, chaired by Goro Miyamoto.

11:10 Invited. Role of the Burgers vectors of interfacial dislocations in precipitation crystallography. *Wenzheng Zhang, Tsinghua University, Beijing, China*.

11:40 Unravelling precipitation kinetics in nanosteels using small angle neutron scattering. *Zamran Zahoor Khan, Delft University of Technology, the Netherlands*.

12:00 Carbides in ferritic steels: defects and atomic diffusion from ab-initio based studies. *Adrien Lemercier, CEA S2CM/SRMP, Saclay, France*.

12:20 On the precipitation and transformation kinetics of precipitation-hardening steel X5CrNiCuNb16 4 in a wide range of heating and cooling rates. *Benjamin Milkereit, University of Rostock, Germany*.

12:40 SHarp Interface FUll field precipitation MOdel. *Michel Perez, INSA Lyon, CNRS, UCBL, MATEIS, UMR5510, France*.

Th2b.1-5: Tempering, Senaatszaal, chair to be determined.

11:10 Invited. Spontaneous transition from para-equilibrium to ortho-equilibrium: a study of cementite precipitation kinetics. *Kaisheng Wu, Thermo-Calc Software Inc, McMurray, United States*.

11:40 Impact of carbon content on carbide precipitation sequences in low alloy steel. *Victor Labussiere, Université Paris-Saclay, CEA, SRMA, Gif-sur-Yvettes, France*.

12:00 Nanocrystalline grain refinement induced by hard turning in a tempered martensitic dual-hardening Hybrid 60 steel. *Sahith Kokkirala, Chalmers University of Technology, Gothenburg, Sweden*.

12:20 The abnormal carbon redistribution in lath martensite during tempering in Mn-patterned steels. *Zhiping Xiong, Beijing Institute of Technology, China*.

12:40 Decomposition of retained austenite during tempering of high-strength tool steels. *Myriam Dumont, Arts et Métiers Institute of Technology, Lille, France*.

Th2c.1-5: Nucleation and spinodal (I), Frans van Hasseltzaal, chaired by Nele Moelans.

11:10 Invited. A new approach to solid-state nucleation in kinetically constrained systems. *Christopher Hutchinson, Monash University, Melbourne, Australia*.

11:40 Using impurity atoms to inoculate the solid-state homogeneous precipitation through a nonclassical nucleation pathway. *Yanjun Li, Norwegian University of Science and Technology, Trondheim, Norway*.

12:00 Fundamental study of nonclassical nucleation mechanisms in iron: heterogeneous nucleation at grain-boundary. *Xiaoqin Ou, Central South University, Changsha, China*.

12:20 Microstructural design by combining nanograins and spinodal decomposition in a Fe-Cr alloy. *J. Macchi, Univ Rouen Normandie, INSA Rouen Normandie, CNRS, Normandie Univ, Rouen, France*.

12:40 Spinodal decomposition induced nano-sized clustering during low-temperature nitriding of Fe-35Ni-X (X=Cr, V, Mo, Al, Mn) alloys. *Yulin Xie, Institute for Materials Research, Tohoku University, Sendai, Japan*.

13:00 – 14:00 Lunch, Foyer

14:00 – 15:50 Sessions Th3

Th3a.1-4: Precipitation (III) - Microalloying, Auditorium, chaired by Elena Pereloma.

14:30 Precipitation evolution in microalloyed steels during welding. *Hugo Lannay, MatéIS, Lyon, France*.

14:50 Mean field modelling of microstructure evolution of micro-alloyed steels in thermomechanical processing. *Shabnam Fadaei Chatroudi, McMaster University, Hamilton, Canada*.

15:10 Detecting iron in vanadium carbide nanoprecipitates by atomic-resolution scanning transmission electron microscopy techniques. *Amir Sabet Ghorabaei, University of Groningen, the Netherlands*.

15:30 Influence of the precipitation state on the work hardening in 6016 and 6061 alloys. *Ernst Kozeschnik, TU Vienna, Austria*.

Th3b.1-4: Segregation, Senaatszaal, chaired by Chad Sinclair.

14:00 Invited. Modelling the interaction of carbon segregation to defects and carbon partitioning in multiphase steels. *Konstantina Traka, Delft University of Technology, the Netherlands*.

14:30 Phase transformation upon cooling in steels alloyed with Mn and Si. *Monika Krugla, Tata Steel Europe, the Netherlands*.

14:50 Boron subsurface depletion in cold rolled hot dip galvanized AHSS strip steel. *Joost van Krevel, Tata Steel R&D, IJmuiden, the Netherlands*.

15:10 Role of interfacial coherency and carbon in niobium segregation at ferrite/austenite interface: an atomistic study. *Haokai Dong, Tsinghua University, Beijing, China*.

Th3c.1-5: Nucleation and spinodal (II), Frans van Hasseltzaal, chaired by Christopher Hutchinson.

14:00 Invited. Hydrogen-assisted spinodal decomposition in a TiNbZrHfTa complex concentrated alloy. *Yan Ma, Delft University of Technology, the Netherlands*.

14:30 Phase separation in pre-patterned metastable Ag-Cu thin films. *Vivek C. Peddiraju, Indian Institute of Technology Hyderabad, Sangareddy, India*.

14:50 The formation of κ-carbides through spinodal decomposition and their effect on the mechanical properties of a low-density steel. *Alexandros Banis, National Centre for Scientific Research 'Demokritos', Athens, Greece*.

15:10 Spinodal decomposition in the Li-Mg system. *Alisson Kwiatkowski da Silva, Thermo-Calc Software AB, Solna, Sweden*.

15:30 Revisiting decomposition kinetics in the Al-Zn binary alloy. *Hugo Jean, Université Grenoble Alpes, UGA, CNRS, SIMaP, Grenoble, France*.

15:50 – 16:00 Aaronson Award, Foyer, by Annika Borgenstam and Leo Kestens.

16:00 – 17:00 Poster session, Foyer

Friday, July 11

08:30 – 09:15 Plenary 7, Auditorium, chaired by Maria Santofimia.

Interface character-dependent energy dissipation and interaction of alloying elements during ferrite/austenite interface migration. *Goro Miyamoto, Tohoku University, Sendai, Japan*.

09:20 – 10:50 Sessions F1

F1a.1-4: Impurities and novel production methods (I), Auditorium, chaired by Ernst Gamsjäger.

09:20 Invited. Full field modelling of the impact of tramp elements on the microstructure evolution of Nb-containing high strength low alloy steels during hot rolling. *Kees Bos, Tata Steel Nederland B.V. (Tata Steel IJmuiden), IJmuiden, the Netherlands*.

09:50 Fine-tuning machine learned potentials to study diffusion of tramp elements in bcc Fe. *Naveen Mohandas, Delft University of Technology, the Netherlands*.

10:10 The effect of residual alloying elements on the isothermal γ→α transformation in low carbon low alloy steels. *Yulin Ju, University of Warwick, Coventry, United Kingdom*.

10:30 Compositionally flexible alloy design towards recycling mixed stainless steel scraps. *Lingyu Wang, Northeastern University, Shenyang, China*.

F1b.1-4: Pearlite (I), Senaatszaal, chaired by Hussein Farahani.

09:20 Invited. Modelling the growth kinetics of divergent (partitioned) pearlite. *Jiayi Yan, Tsinghua University, Beijing, China*.

09:50 Recovery annealing mechanisms in cold rolled C-Mn ferrite pearlite high strength steels by correlative electron microscopy. *Jaiprakash Gautam, University of Hyderabad, India*.

10:10 Exploring non-cooperative eutectoid transformations in steel: a decade of phase-field modelling. *Kumar Ankit, Arizona State University, Tempe, United States*.

10:30 The non-steady-state growth of pearlite in Fe-C-Mn(-Al) steels. *Carlos Capdevila, CENIM-CSIC, Madrid, Spain*.

F1c.1-3: Austenite formation, Frans van Hasseltzaal, chaired by Sybrand van der Zwaag.

09:20 Invited. Microstructure evolution of line pipe steels during reheating. *Minyu Tseng, The University of British Columbia, Vancouver, Canada*.

09:50 Modelling the austenite formation in single pass laser heat treatments. *Felipe Castro Cerda, Universidad de Santiago de Chile, Santiago, Chile*.

10:10 New insights into the influence of Al and Si on the austenitisation of medium-Mn steel. *Leo Kestens, Ghent University, Belgium*.

10:50 – 11:20 Break, Foyer

11:20 – 12:30 Sessions F2

F2a.1-2: Impurities and novel production methods (II), Auditorium, chaired by Kees Bos.

11:20 Invited. Science of dirty alloys – improving recyclability of aluminium alloys. *Paul Chatron-Michaud, Univ. Lyon, UCBL, LMI, CNRS, UMR 5615, Villeurbanne, France*.

11:50 Mapping gangue effects on metallisation kinetics in hydrogen-based direct reduction. *Yuxiang Wu, Monash University, Melbourne, Australia*.

F2b.1-2: Pearlite (II), Senaatszaal, chaired by Carlos Capdevila.

11:20 Invited. Multi-scale characterisation of subsurface microstructural evolution in a pearlitic rail steel induced by rolling contact tests. *Matteo Russo, INSA Lyon, Villeurbanne, France*.

11:50 Quantitative evaluation of intrinsic mobility of interfaces with various characters during ferrite and pearlite transformation in Fe-C binary alloys. *Yongjie Zhang, Tohoku University, Sendai, Japan*.

F2c.1-3: Intermetallics, Frans van Hasseltzaal, chaired by Alisson Kwiatkowski da Silva.

11:20 Invited. Structurally complex intermetallic phases: understanding microstructure based on crystal structure. *Andreas Leineweber, TU Bergakademie Freiberg, Germany*.

11:50 Formation of intermetallic CoSnX phases in the Sn-rich corner of the binary Co-Sn system. *Stefan Martin, TU Bergakademie Freiberg, Germany*.

12:10 Precipitation behaviour and microstructural evolution of σ phase and carbides in super austenitic stainless steels. *Min Zhang, Beijing Jiaotong University, China*.

12:30 – 13:30 Lunch & Closure, Foyer

Posters

Quenching & Partitioning

P01. Comparison of microstructure and mechanical properties after quench-temper and quench-partitioning heat treatment for a high silicon medium carbon cast steel. S. *Hosseinreza, H. Rastegari, A. Abedini*.

Austenite

P02. Transformation of pancaked austenite in pipeline steel and its effect on the resistance to ductile fracture propagation. *A. Gervasyev, F. Barbaro, L. Kestens, R. Petrov*.

P03. Investigation of retained austenite stability in bearing steels. *M. Amiri, P.-L. Larsson, L. Toller-Nordström, P. Hedström, J. Lai, A. Borgenstam*.

Phase transformation kinetics

P04. A probabilistic approach to phase transformation kinetics. *G. Krielaart*.

Tempering

P05. Copper content and tempering synergy in tailoring the fatigue resistance of low-carbon steels. *A. Mandal, S. Bagui, K. Dev Sharma, A. Karmakar*.

P06. Tempering of low alloy medium carbon steel under continuous fast heating and cooling conditions. *Cristofer Leandro Aravena Barria, Felipe Manuel Castro Cerda*.

Martensite

P07. Assessment of the martensitic start temperature in carbon steels. *Luciano Alexis Figueroa Maturana, Felipe Manuel Castro Cerda*.

Strain solver

P08. Efficient finite strain elasticity solver for phase-field simulations. *O. Shchyglo, M. Adil Ali, H. Salama*.

Elastic strain

P09. Effect of nonlinear elasticity on microstructure evolution behavior using phase-field method. *J. Lee, K. Chang*.

Diffusion

P10. Quantitative analysis of diffusion equation when diffusivity is given as a function of concentration. *Y. Chu, J.-S. Kim, K. Chang*.

P32. Isothermal Formation of Pearlite in Medium Mn Steel. *Diego Jesús Zúñiga Montero, Dilan Sebastian Muñoz Vilches, Felipe Manuel Castro Cerda*.

Precipitation

P11. Modelling the Precipitation of Carbonitrides during Hot Strip Mill Process. Y. *Yadvendra, A. Rao Chintha, H. Larsson, L. Höglund, J. Odqvist*.

P12. The effect of bath temperature on the microstructure and corrosion resistance of (Si, Ti) micro-alloyed Zn-6Al-3Mg alloy coating. *H. Chen, R. Song, Z. Zhang*.

P13. Computational Design and Thermal Stability of Novel Alumina-Forming Martensitic Steels at 550-650 °C. *C. Fernandez-Jimenez, I. Toda-Caraballo, D. San-Martin, C. Petersson, P. Szakalos, C. Capdevila*.

P16. Isothermal Phase Transformation Study of Precipitates in ER312 Duplex Stainless Steel. *S.-Y. Lu, S.-P. Tsai, T.-W. Lin*.

P17. A concise model for soft impingement during diffusion-controlled growth of spherical precipitates in the solid-state. *T. Brederode, E. Offerman, M.G. Mecozzi*.

P34. Investigation of the microstructure evolution in martensitic stainless steels during austenitization and quench. *Alice Dautézac, María J. Santofimia*.

Solidification

P18. Solidification Structure Mathematical Simulation Research of Pangang 37Mn5 Oil Well Pipe Steel. *Z. Qiang*.

Recrystallisation

P19. Impact of Boron and Titanium on the Mechanical Properties and Recrystallization Behaviour of Low Carbon Cold Rolled and Batch Annealed HSLA Steels. C. *Rampelberg, C. DiGiovanni, T. Tom Zhou, C. Cathcart, B. Amirkhiz, H. Zurob, C. Scott*.

Plasticity

P21. Sequential γ-ε-α' transformation preserves high elongation in an ultrafine-grained high Mn steel**.** *W. Xu, L. Wang, G. Dong, J. Yuan, J. Wang, C. Wang, M Huang*.

High entropy alloys

P22. Structural and chemical analysis of multi-component alloys based on Ti, Nb, Zr, Ta, Ag prepared by arc-melting. A. *Benediktová, P. Subramanian, M. Procházka, Z. Jansa, J. Minár*.

P23. Microstructure and welding characteristics of single- and two-phase Al0.2CoCrFeNi produced by tailored thermomechanical treatments. R. *Ambe, R. Korla, S. Chatterjee*.

Additive manufacturing

P24. In-situ heating TEM observation and high-temperature performance of sustainable Al-Fe alloys built by laser-powder bed fusion (L-PBF). *S.-P. Tsai, J.-Y. Wang, V. Soh, P. Wang, T.-C. Tsao, M.-W. Chu, M.-H. Lee, Z. Sun, Y. Ma*.

P26. Microstructural development during wire arc additive manufacturing of bronze/stainless steel bimetallic structure. *M. Mahmoudiniya, L. Kestens, M. Hermans*.

Materials for energy

P27. Multiphysics Simulation of Flow-Assisted Erosion of Main Steam Pipeline of iSMR. *H. Yu, K. Chang, J. An*.

P36. Microstructure Effects on Oxidation in Carbon Steels. *Patricia Libertad Gatica Godoy, Felipe Manuel Castro Cerda*.

P35. Modeling the microstructure-dependent hydrogen redistribution during hydrogen storage applications. *Konstantina Traka, Jilt Sietsma, Maria J. Santofimia*.

Sustainable metallurgy

P28. High-throughput mapping of ferrite growth kinetics in residual-containing steel. A. *Decroocq, S. Allain, I,-E. Benrabah, B. Denand, A. Deschamps, G. Geandier, H. van Landeghem*.

P29. On the use of ammonia as reducing agent for green steelmaking. *M. Villa, B. Ali, M. Somers*

P30. A sustainable approach to develop high silicon steels using hydrogen reduced sponge iron powder. *S. Banothu, G. Jai Prakash*.

PTM25

7 - 11 July 2025, Delft

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