TMS 2018

147th Annual Meeting & Exhibition

THE WORLD COMES HERE.

MARCH 11–15, 2018 • #TMSAnnualMeeting

PHOENIX CONVENTION CENTER • PHOENIX, ARIZONA, USA

FEATURING:

CDSM 2018

COMPUTATIONAL DESIGN AND SIMULATION OF MATERIALS

PRE-SHOW REPORT

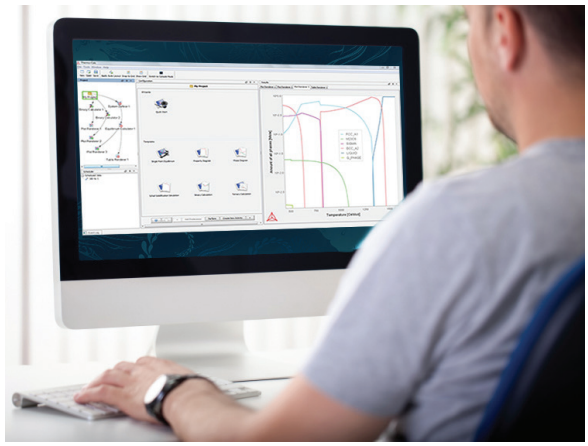
www.tms.org/TMS2018

Thermo-Calc Software

Over the past 30 years Thermo-Calc has gained a world-wide reputation as the most popular and most widely cited software package for thermodynamic calculations in multicomponent systems.

With more than 30 databases covering a broad range of materials and systems including Fe-based alloys, Ni-, Al-, Mg-, Ti-, alloys, solders, oxides and slags, aqueous systems and more, Thermo-Calc is a powerful tool for performing thermodynamic and phase equilibria calculations for multicomponent systems.

Our add-on programs, the Diffusion module (DICTRA) and the Precipitation module (TC-PRISMA), extend the software by allowing for accurate simulations of diffusion in multicomponent alloys and the prediction of precipitation kinetics. Our software developments kits enable Thermo-Calc to be called directly from the user's own software or from MATLAB®.



BENEFITS OF USING THERMO-CALC

Reduce the number of costly, time-consuming experiments

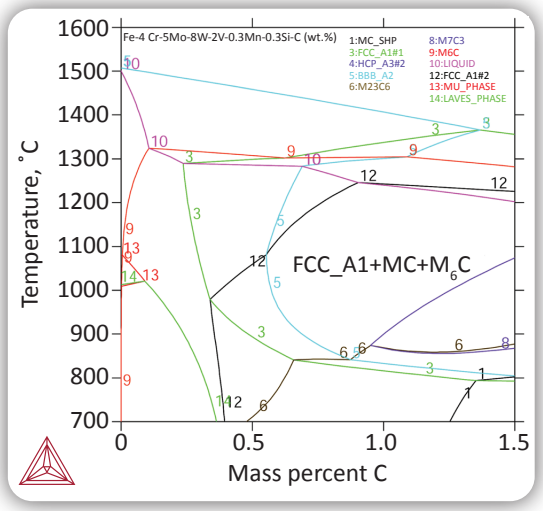
Increase the value of experiments through deeper understanding of the results

Define safe and optimal processing windows in terms of composition tolerances and temperature

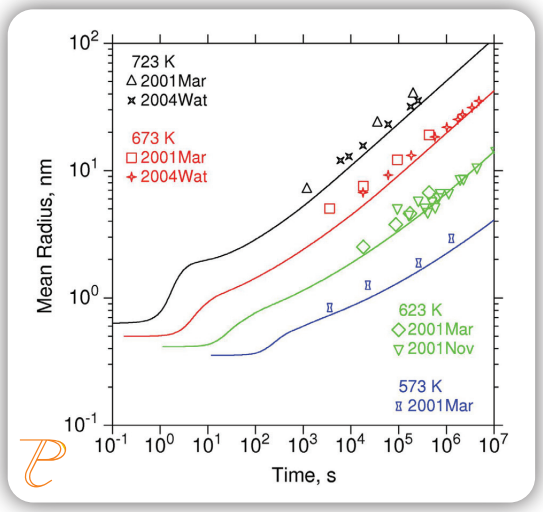
Base decisions on scientifically supported models, tools and data

Shorten development time and bringing products to market faster

Make predictions that are difficult or even impossible with an experimental approach



Multicomponent Phase Diagrams



Precipitation Kinetics

www.thermocalc.com

Exhibitors (as of October 24, 2017)

Company	Booth Number
ABB, Inc.	317
AdValue Technology	212
Advanced Dynamics	400
ALTEK, LLC	404
Anton Paar USA	201
AO Energoprom Management	421
BlueQuartz Software	204
Bruker Corp.	313
Claudius Peters	200
CompuTherm, LLC	318
EDAX Inc.	302
FemtoTools AG	414
Fives	300
Fritsch Milling and Sizing	203
Gautschi Engineering GmbH	502
Gillespie & Powers	403
GLAMA	306
GNA alutech inc.	402
Goodfellow	412
Granta Design	208
Haarslev Industries Press Technology GmbH + Co.Kg	319
Hycast AS	417
International Aluminium Journal	217
Keysight Technologies	309
Light Metal Age	303
Maschinenfabrik Gustav Eirich GmbH & Co KG	301
Mecfor Inc.	408
The Metallurgy and Materials Society of CIM	512
MTI Corporation	500
MTS Systems Corp.	503
Netzsch Instruments NA LLC	501
NKM Noell GmbH	305
Nuclear Science User Facilities	213
Outotec	312
PolarOnyx, Inc.	207
Proto Manufacturing	320
Seco/Warwick Corp	215
Shenzhen Summit Levitation Metallurgical S&T Limited	508
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Synton Mdp AG	206
Techmo Car S.p.A	316
Tenova Inc.	506
Tesla Inc.	416
Thermo Fisher Scientific (formerly FEI)	209
Thermo-Calc Software	401
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PRE-SHOW REPORT

Exhibit Floorplan (as of October 24, 2017)

March 11–15, 2018

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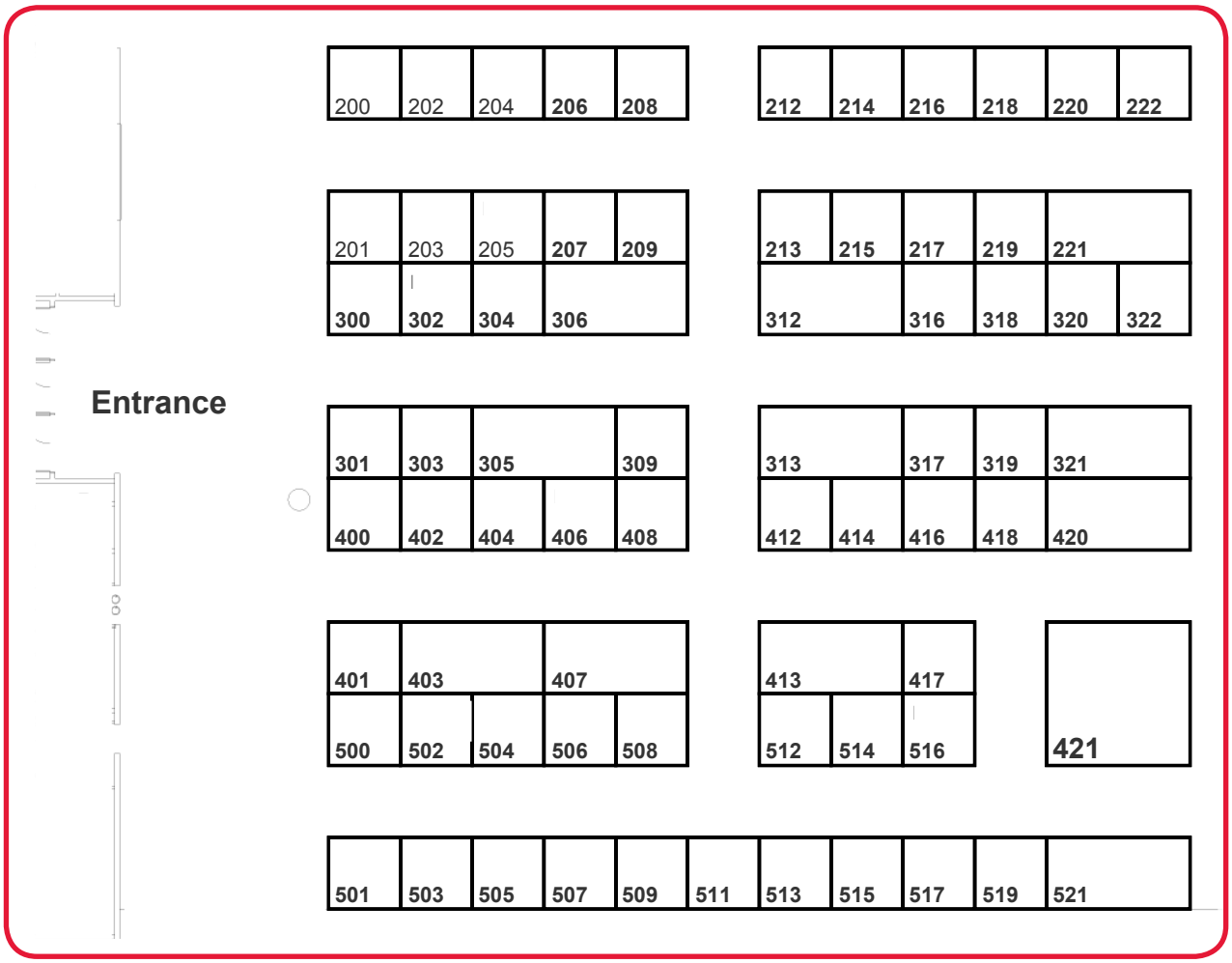

Plenty of great spaces are still available!

Contact us today to reserve your booth in the TMS2018 Exhibit Hall:

Tyson Harrison, TMS2018 Booth Sales
Corcoran Expositions
1–312–541–0567, ext. 663
tyson@corcexpo.com

Carly DiVito, TMS2018 Exhibit Manager
Corcoran Expositions
1–312–541–0567, ext. 643
carly@corcexpo.com

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PRE-SHOW REPORT

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CompuTherm LLC, established in 1996, is a leading developer of software and databases for thermodynamic and phase diagram calculations as well as kinetic simulations based on the CALPHAD approach. Our products include the Pandat™ software, online iPandat, and thermodynamic databases for numerous alloy systems, such as Al-, Co-, Cu-, Fe-, Mg-, Mo-, Nb-, Ni-, Ti-, Zr-based alloys. These products are currently being used by hundreds of users worldwide.

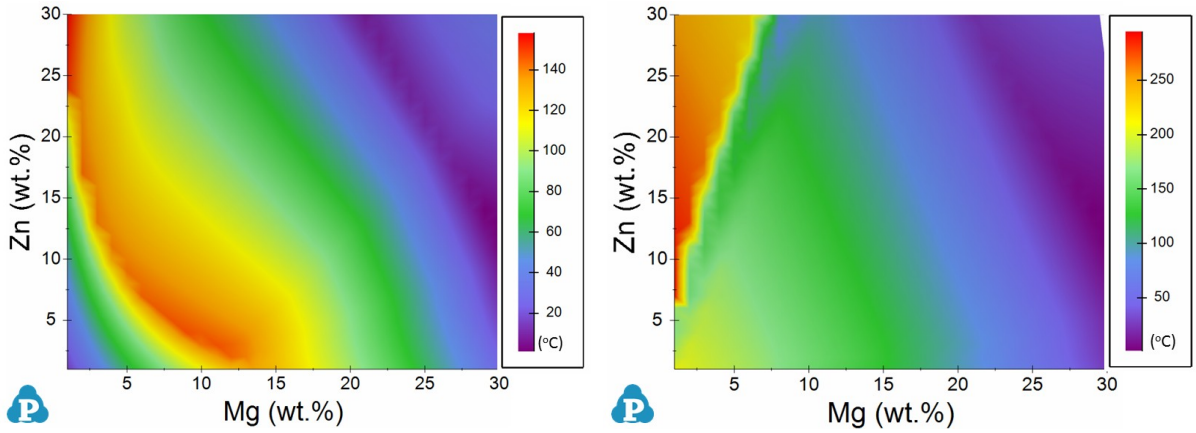
Pandat™ is a powerful software package with a robust thermodynamic calculation engine, a friendly graphical user interface, and a flexible post calculation table editing function which allows user to plot variety diagrams. It is designed to create an integrated workspace for variety of calculations. Current modules include:

PanPhaseDiagram: perform calculation of phase equilibrium and thermodynamic properties for technical important multi-component alloy systems. Calculated properties include stable and metastable phase diagrams, liquidus projection, stability diagrams, phase fraction and composition, phase transformation temperature, solidification path and heat evolution with the Scheil-Gulliver model, activity, driving force and much more. Highlight features include 3D diagrams, property contour diagrams, and High Throughput Calculation (HTC).

***PanPrecipitation*:** perform simulation of diffusion-controlled precipitation kinetics during heat treatment process. Langer-Schwartz theory and Kampmann-Wagner numerical approach are used to treat concurrent nucleation, growth/dissolution, and coarsening under isothermal and non-isothermal conditions. Simulated properties include temporal evolution of average particle size and number density, temporal evolution of particle size distribution, and temporal evolution of volume fraction and composition of precipitates.

PanOptimizer: perform optimization of model parameters for users to develop their own thermodynamic, mobility, and property databases.

High Throughput Calculation (HTC) – the purpose of high-throughput calculation is to perform thousands of calculations in the user defined composition space by one simple setting. Alloy compositions that satisfy user defined criteria can then be searched through data mining of the thousands of simulated results. This function allows a user to develop alloys with certain properties through design. The process is mostly automated by the following steps: (1) user sets the composition space and calculation steps, Pandat then generates batch files automatically to perform all the calculations; (2) user sets the criteria of the properties, Pandat then searches all the alloy compositions that satisfy the criteria through data mining from the calculated results. The searched results can be listed in a table or presented as a color map. Below Figure shows the solidification range in the Al-Mg-Zn system with varying compositions of Mg and Zn. The left figure is calculated by Lever Rule and the right figure by Scheil model.



For more information, please visit our website: www.computherm.com