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DEFORM News

Training

SFTC offers DEFORM training for U.S. and Canadian customers on the following dates in early 2022.

- February 8-10
- April 12-14
- June 7-9

Additional training details are listed on the DEFORM website.

For users outside the U.S. and Canada, please contact your local DEFORM distributor for more information on the training events available in your region.

Social Media

SFTC can be found on LinkedIn and YouTube, via the following links.

www.deform.com/linkedin
www.deform.com/youtube

30th Anniversary SFTC

DEFORM®
Design Environment for FORMing

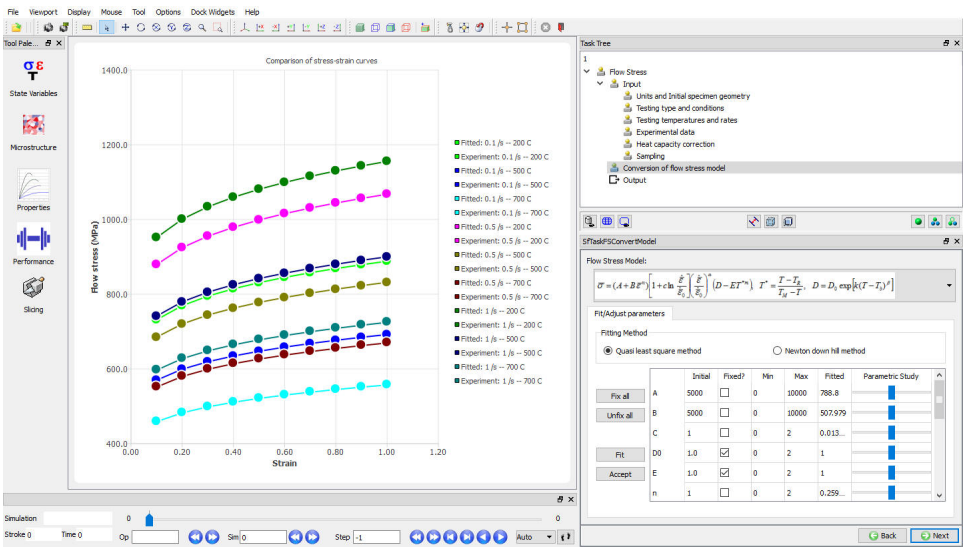
Material Suite

Material may be the most significant variable in both manufacturing and simulation. Manufacturers are well aware that material selection can make or break a manufacturing process. Similarly, simulaton accuracy depends on the quality of the underlying material definition. Also consider that a variety of microstructural features significantly impact part manufacturing and performance.

The DEFORM Material Suite was developed in response to an increasing emphasis on material data and advanced material modeling. The optional module provides diverse capabilities to enhance DEFORM for data development, multiscale modeling and microstructural analysis. Some of its tools reduce the time and effort required to develop material definitions. Others provide postprocessing methods for evaluating local response in a component model. The module facilitates the following tasks:

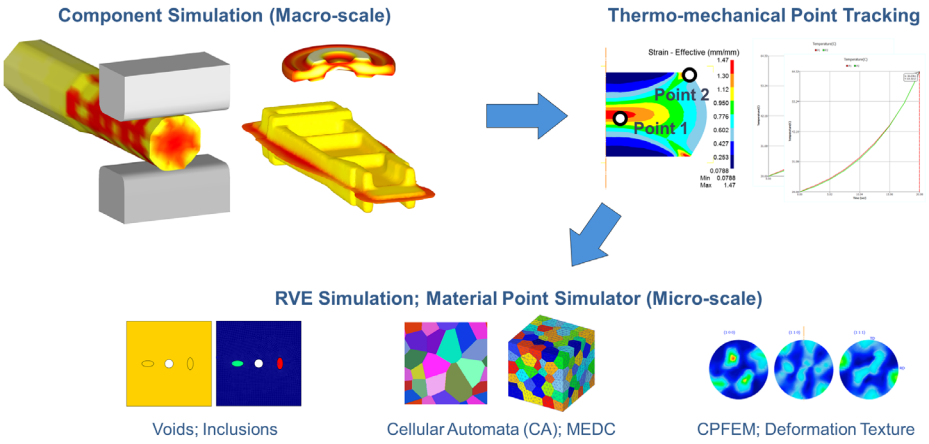
- Fitting flow stress models to experimental data
- Deriving Johnson-Mehl-Avrami-Kolmogorov (JMAK) parameters from experimental data
- Generating TTT curves from chemistry
- Tracking micro void/particle evolution
- Predicting and visualizing mesoscale grain kinetics
- Performing probabilistic modeling
- Evaluating deformation texture
- Incorporating crystal plasticity
- Estimating mechanical properties

The flow stress and JMAK fitting tools simplify material characterization tasks through efficient, wizard-based workflows. The flow stress utility (below) converts raw tension/compression data into DEFORM flow stress data. It offers adiabatic correction, elastic compensation, data sampling and constitutive model curve fitting. A similar tool processes experimental data to find JMAK model constants that define material-specific grain growth and recrystallization behavior.

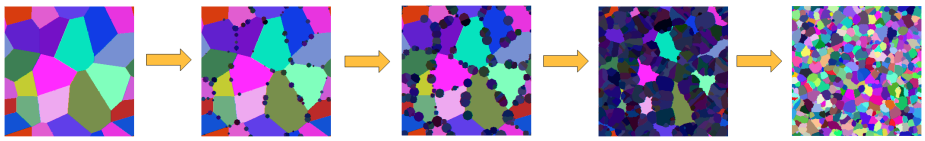


Integrated Computational Materials Engineering (ICME) is a modeling effort to relate microscale features (voids, grains, precipitates, etc.) to component-scale products and processes. The goal of ICME is to understand critical process-structure-property relationships in engineered materials. Unfortunately, simulating microscale behaviors directly within a macroscale model is, in many cases, impractical due to the time and effort that would be required.

Material Suite offers 'state of the art' postprocessing tools that integrate multiscale modeling methods into the DEFORM system. These tools offer practical, guided modeling workflows and efficient multiscale analyses. This is accomplished through the use of thermo-mechanical point tracking, which links a completed component simulation to a microscale predictive model (below).



A variety of multiscale material modeling tools are provided in Material Suite. Representative volume element (RVE) models track the evolution of voids, inclusions and porous material density. Cellular Automata (CA) models predict grain morphology (below) based on fundamental recrystallization and grain growth kinetics. Crystal plasticity models calculate deformation texture and potentially its impact on flow stress and anisotropy. Monte Carlo probabilistic models evaluate statistical variation in thermomechanical operations, helping to predict outliers such as as-large-as (ALA) grains.



Material Suite also includes features that connect DEFORM with external modeling software. Its strength model links to a third-party tensile strength estimation program. DEFORM results can also be output to a DARWIN model for life prediction. Finally, an ANSYS export interface bridges the gap between manufacturing simulation and structural or in-service analyses.

64-bit Support

DEFORM V13 will include full 64-bit support, completing the transition to a modern environment with comprehensive large file handling and faster speeds. 32-bit support will thus be discontinued as of the V13.0 release. The elimination of legacy 32-bit code will result in a smaller DEFORM installation. 64-bit menu options will be eliminated since they will no longer be necessary.

DEFORM V13.0 Release

DEFORM V13.0 is scheduled to be released in late 2021. The major release introduces an exciting set of new tools, capabilities and applications. V13.0 changes include:

- Full 64-bit support
- 64-bit 2D simulations
- 2D local remeshing
- Additional hybrid friction models
- New damage models
- New object orientation tools
- Expanded "find axis" functions
- Press stiffness DOE variable
- Worn geometry updating
- Enhanced "State variable between two points" capabilities
- RZ velocity plot
- ASTM grain size measure
- Show minimum die distance
- Diff step results exporting
- More hot keys
- New themes
- Deep neural network (DNN) integration
- Steel flow stress prediction DNN
- Project/database archive tool
- Recycle Bin support
- New user manual
- Next-gen Presentation Player
- ALE tube piercing
- Cogging enhancements
- New Shot Peening template
- Enhanced RVE inclusion model
- CFD turbulent flow update
- New 2D/3D meshers (beta)
- Tool Life Prediction study (beta)
- Arc Welding template (beta)
- Geo Mesh Tool product (beta)

The complete list of changes are available in the V13.0 Release Notes.

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