JMatPro
PRACTICAL SOFTWARE FOR MATERIALS PROPERTIES

API VERSION 9.0 – November 2024

- Extended the calculation of physical, thermophysical and mechanical properties below room temperature
- Added Heat Treatment module for the calculation of microstructural evolution and room-temperature strength following heat treatment of nickel and nickel-iron based superalloys
- Added secondary phases in the calculation of CCT diagrams of general steels, including the contribution of carbides to the strength
- Extended the calibration of TTT/CCT diagrams of general steels to include shifts in bainite and martensite start temperatures
- Added atomic and weight phase fractions to the output of cooling and quench solidification calculations
- Added magnetic permeability to the output of cooling and quench solidification calculations for general steels
- Added phase boundaries search in Solidification calculations using the quench from equilibrium model
- Improved robustness of automatic extraction of austenitisation temperature in quench solidification calculations for general steels
- Extended high-temperature strength and flow stress calculations in the Mechanical module for stainless steels in the tempered condition
- Improved flow stress calculations for general steels in the tempered condition
- Extended the calculation of tempered hardness to consider general steels of martensitic, bainitic and pearlitic microstructures
- Changed high-temperature strength calculation strategy to make sure output respects user choice of maximum temperature
- Improved phase mapping to deal with hanging and labelling issues
- Changed stacking-fault energy calculation to prevent negative values
- Updated the thermodynamic and properties databases to match those included in JMatPro v15.0
- Added Nb to aluminium alloys
- Added Ti to copper alloys
- Added Si3N4 phase to Fe thermodynamic database
- Adjusted (Fe,Ni)Al phase in Fe thermodynamic database
- Added Cu4Ti and CuNiTi phases to Cu thermodynamic database
- Reassessed AlCuFeNi systems in the Cu thermodynamic database
- Adjusted Mo in LAVES phases in Ni and Co thermodynamic databases
- Adjusted Ni and Co in FCC contribution to molar volume
- Extended properties of SiC phase
- Fixed possible failure in Solidification calculations using the quench from back diffusion model for steels, when ferrite fully transforms to austenite in a single temperature step below the solidus
- Fixed possible failure in Solidification calculations for heavily alloyed titanium alloys
- Fixed possible failure in high-temperature strength calculations