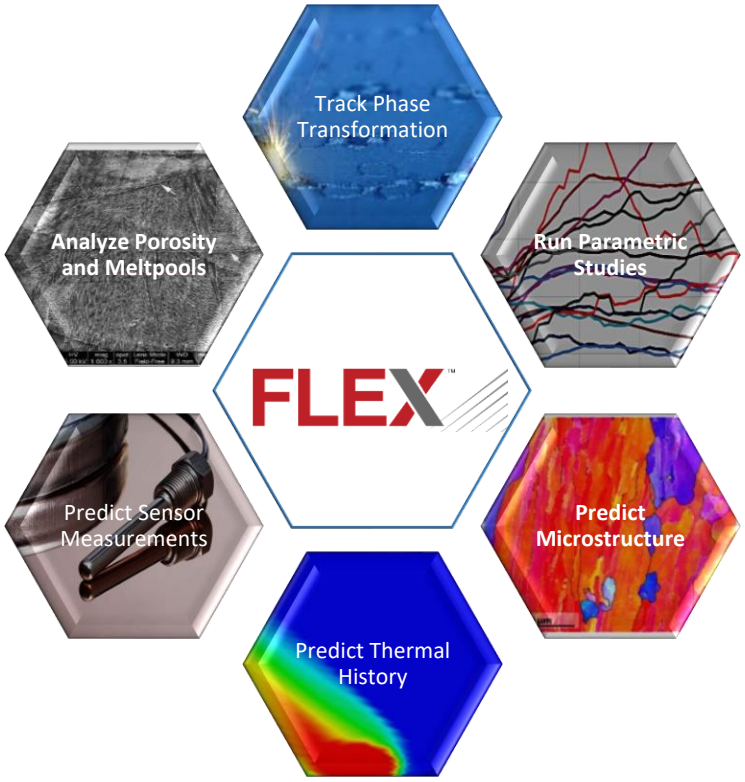
FLEX™ - Metal AM Simulation for Highest Level of Part Integrity

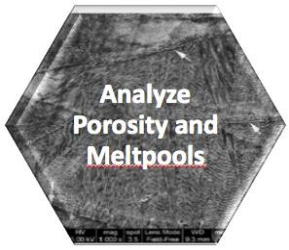
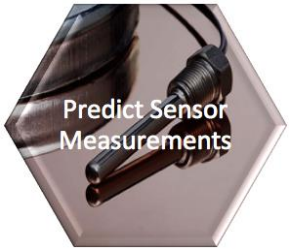
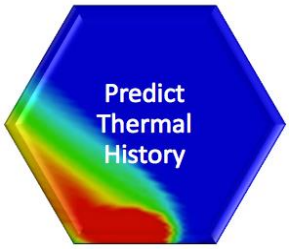
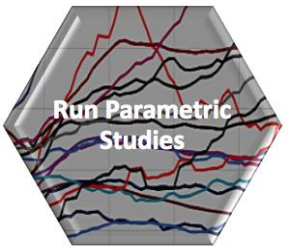
FLEX™ enables metal Additive Manufacturing Specialists, Engineering Analysts, Materials Scientists, OEMs, and Powder Suppliers to dial in the best process parameters for a given machine / material combination to achieve the highest level of part integrity and to predict microstructure, properties and sensor feedback before building the part.

- Proprietary mathematical algorithms produce results orders of magnitude faster than competing finite element software tools
- FLEX simulations are based on exact scan vectors from a build file or user-defined scan patterns
- Custom curated databases include non-linear temperature-dependent thermophysical properties for each material as a function of physical state



Why use FLEX?

- Determine optimum machine / material run parameters
- Control microstructure and material properties
- Implement new metal powders faster and more efficiently
- Reduce the number of experiments needed to qualify components
- Mitigate risk while accelerating innovation

	• Analyze meltpool-scale phenomena for full-sized components and obtain detailed thermal history and microstructure information • Run single-bead simulations to quickly understand the shape and size of meltpools that will be created using different process-parameter combinations (e.g. scan speed and laser power) • Predict how much of the part is porous due to lack-of-fusion for selected sets of process parameters
	• Predict sensor measurements based on machine/material combinations for a variety of thermal sensors, including stationary, moving point, IR camera and pyrometer sensors for powder bed metal AM machines
	• Calculate temperature history and track phase transformations from powder, to liquid, to solid through the entire build process – enabling you to control the final properties of the printed part
	• Predict the grain size, texture and segregation in a part based upon process-parameters input (build plate temperature, laser power and speed, and scan strategy) • Predicting microstructure empowers you to control anisotropic mechanical properties, such as material strength and elastic modulus
	• Parametric functions allow you to evaluate hundreds or thousands of criteria virtually, without having to run physical experiments
	• FLEX™ uses chemistry-dependent & thermal-gradient-dependent phase change details to accurately predict thermal history, sensor output and microstructure at an unparalleled level