

# Multiscale.Sim 2022R2

Material design with simulation

Multi-scale analysis add-in tool for Ansys® Workbench™ environment

## What's New

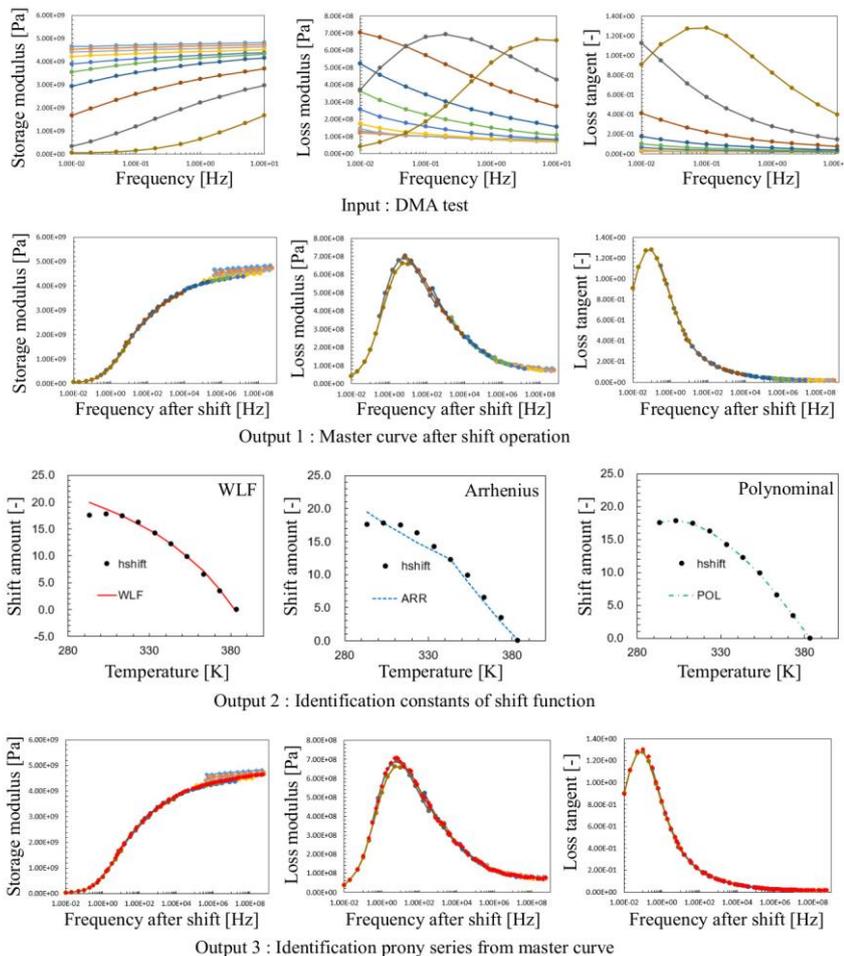
**Ansys 2022 R2 Support:** Multiscale.Sim 2022R2 is compatible with Ansys Workbench 2022 R2 and Ansys Mechanical™ APDL 2022 R2.



**New features and enhancements:** This version introduces a new tool for curve fitting, and brings several enhancements to microstructure model creation.



## New tool for curve fitting by isotropic visco-elastic model



A dedicated tool for curve-fitting material constants for isotropic viscoelasticity has been implemented. The shift function and Prony series of material properties can be identified from the results of a DMA test at several temperature levels.

This advanced optimization analysis method developed by the Hirayama Laboratory at Nihon University enables robust curve-fitting results to be obtained without the need for special know-how.

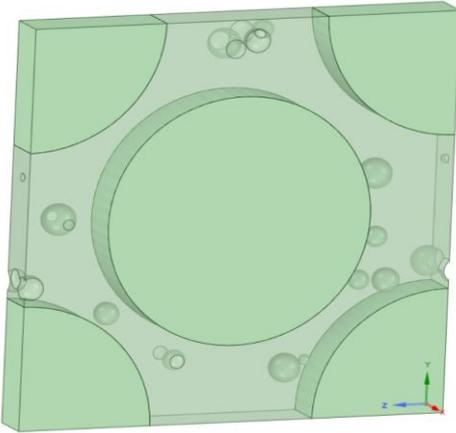
**Fig.1** Identification of material constants of isotropic visco-elastic model. For more details of this tool, please refer to the following help topic: Windows program list > Ansys 2022 R2 > Multiscale.Sim curve-fitting for visco-elastic.

## Templates for model creation

Short fiber dispersion model based on fiber orientation tensor.

The randomness of fiber orientation in short fiber dispersion models can now be specified using an orientation tensor. This allows micro-models to be created with direct reference to the output information of common resin flow analysis tools.

### Unidirectional composite consisting voids in the resin ( $\beta$ function)



Unidirectional composite consisting voids in the resin can be created based on the size distribution and number of voids. This feature is created to map the material properties depending on the porosity rate obtained from resin transfer molding.

Fig.3 Unidirectional composite model consisting voids in the resin.

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