

August 30, 2024
CYBERNET SYSTEMS CO., LTD.

Multiscale.Sim joins the Ansys Technology Partner program and introduces new simulation solutions tightly integrated with Ansys technologies.

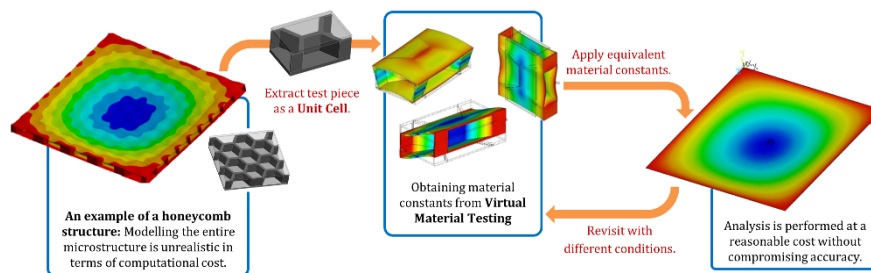
In response to the growing demand for composites manufacturing, the technical document "Ansys Composites and Multiscale Homogenization Technical Overview" is now available to all Ansys users.

Cybernet Systems Co., Ltd. (Head Office: Tokyo, Japan; President and CEO: Yoshiharu Shiraishi; hereinafter "CYBERNET") announces that they have entered into an agreement with Ansys, Inc. to join its Technology Partner program as a Software Partner. CYBERNET, also an Apex Channel Partner of Ansys, develops and distributes several add-in tools for Ansys software, including Multiscale.Sim.

About Multiscale.Sim

Multiscale.Sim is a multi-scale analysis and simulation tool embedded in Ansys® Workbench™ environment that is capable of evaluating equivalent materials properties without depending on physical testing.

Multiscale.Sim has been adopted by leading global manufacturing companies in Japan and overseas since its initial commercial release in 2007.



Analysis flow of Multiscale.Sim

Partnership with Ansys

The Ansys Technology Partner program enables software, hardware, cloud, and high-performance computing (HPC) vendors to build solutions on Ansys software and platforms. It comprises the most innovative players in the industry who collaborate closely with Ansys to offer their shared customers a range of solutions that are customized to meet their business needs. Cybernet is registered under the 'Software Partner' category for the development of Multiscale.Sim. Software Partners test, validate and deliver applications that are integrated with Ansys technologies.

In 2020, CYBERNET joined Ansys's solution partner program as an Advanced Solution Partner, and in 2023, signed up for the Technology Partner program to further strengthen their collaboration with Ansys. As a result of that, CYBERNET began offering Multiscale.Sim on the [Ansys Store](#) and started introducing couplings for well-regarded Ansys software such as Ansys Granta MI® (materials data management software) and Ansys Rocky® (particle dynamics simulation software).



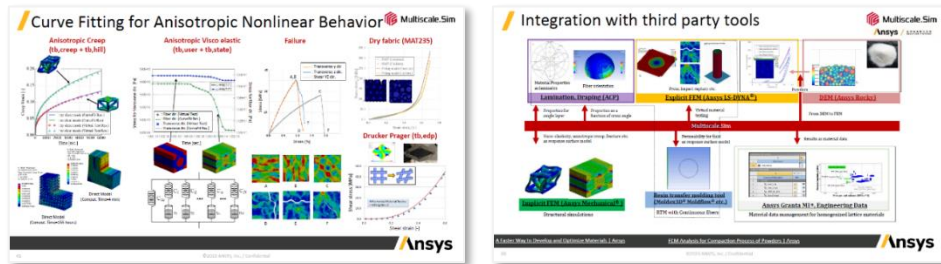
Ansys has recently featured Multiscale.Sim in their "Ansys Composites and Multiscale Homogenization Technical Overview," specifically in the Materials and Multiscale Homogenization tools section.

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Powerful homogenization and localization techniques^{*1} for preparing advanced homogenized nonlinear material models, precise curve-fitting, robust nonlinear features, readily available microstructure templates, and interfaces for popular third-party CAE tools facilitating seamless coupled workflows are among the highlighted features of Multiscale.Sim in this document.

Latest Updates from Multiscale.Sim

The rising demand for composites in manufacturing

Using composites to create sustainable and innovative product designs are on the rise. Yet, traditional physical testing methods poses significant obstacles when evaluating material properties under diverse conditions and over extended periods of time. Additionally, the vast range of material combinations require researchers to run numerous iterations to pinpoint optimal product fits, further complicating reliance on physical testing alone.

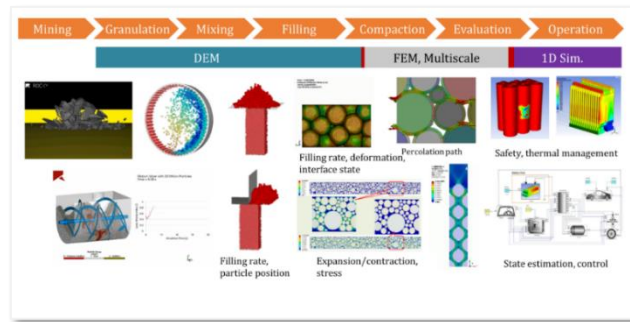
Multiscale.Sim empowers materials and design engineers to overcome their materials challenges and expedite materials decision-making with its robust Virtual Material Testing^{*2} feature and automated microstructure modeling capabilities by utilizing its readily available templates.

Multiscale simulation technology for all-solid-state battery manufacturing by predicting the performance of powder molded products

All-solid-state batteries are emerging as the preferred next-generation battery systems across various industries, spanning from Electric Vehicles (EVs) and industrial machinery to mission-critical aerospace applications like satellites.

Ensuring each material within all-solid-state batteries attains a precisely aligned microstructure is crucial for achieving high-quality performance while upholding maximum operational safety. Therefore, the handling of powders becomes a pivotal aspect, encompassing manufacturing processes such as mixing, filling, compacting, and beyond.

Multiscale.Sim, in conjunction with Ansys Rocky and Ansys Mechanical™, offers a distinctive DEM-FEM^{*3} coupled analysis workflow and employs simulation techniques based on multiscale analysis. This enables engineers to push the boundaries of their capabilities in developing high-performance all-solid-state batteries by accurately predicting material behaviors throughout the design and manufacturing process.



DEM-FEM coupled analysis workflow for all-solid-state battery manufacturing.

For more information on Multiscale.Sim, please visit <https://www.cybernet.co.jp/ansys/product/multiscale/en/>

Notes

- *1: Homogenization and localization: Macroscale FEM analysis is achieved using a model in which the microstructure of composites is homogenized by equivalent material constants. Localization techniques allow us to zoom in a specific area and observe the material behavior such as stress or strain distribution inside a heterogeneous microstructure.
- *2: Virtual material test: Numerical material testing using FE model representing microstructure is performed and obtained macroscopic material responses. In many cases, virtual material testing not only provides results more quickly than actual tests, but also allows easier definition of deformation modes which are difficult to perform in real tests.
- *3: DEM and FEM simulation: If particle deformation does not need to be considered, analysis using the DEM method, which assumes particles as rigid spheres, is efficient. On the other hand, FEM can also observe the deformation of particles, making it possible to obtain more detailed information.

About CYBERNET

Since its establishment in 1985, Cybernet Systems Co., Ltd. has been recognized as a group of engineers proficient in both scientific and digital technologies, such as physics. The company has provided digital solutions and technical consulting services in areas including computer simulation, cybersecurity, AR/VR, and medical image processing, primarily to research, development, and design departments in manufacturing, as well as universities and government research institutions.

In recent years, the company has expanded its range of solutions to include the innovation of engineering chains in manufacturing centered on CAE, MBD, and MBSE, as well as the enhancement of supply chains through the use of PLM and IoT. Additionally, in the field of cybersecurity, Cybernet has built a system to provide advanced solutions that address the latest threats comprehensively.

Furthermore, we are leading the industry as a pioneer in medical AI by being the first company in Japan to obtain medical device approval and public health insurance coverage for software as a medical device.

More details on: <https://www.cybernet.co.jp/english>

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