

Multiscale Simulation Software for High-Performance Materials

Developed by JSOL Corporation
Includes multi-scale engines (nanometer to micrometer) and pre-post functions
Trusted by over 100 industrial users globally

| The Challenge

SLOW, EXPENSIVE PHYSICAL TESTING

Every lab iteration costs weeks.

BLIND SPOTS IN NANOSCALE BEHAVIOR

How do polymer chains entangle during flow? Will these two polymers stay mixed, or separate?

MANUAL OPTIMIZATION

Manual optimization is a trial-and-error guessing game.

| The Impact with J-OCTA

FASTER TIME-TO-MARKET

Predict material properties from the first design iteration, across scales.

CUT LAB COSTS

Run fewer physical trials and spend less on materials and lab time.

MAKE DATA-DRIVEN DECISIONS

Base formulation decisions on molecular structure and predicted properties.

| Applications

Rubber & Elastomers

Design compounds with lower rolling resistance and better filler dispersion.

Energy & Batteries

Model electrolytes, binders and composite electrode materials.

Adhesives, Paints & Coatings

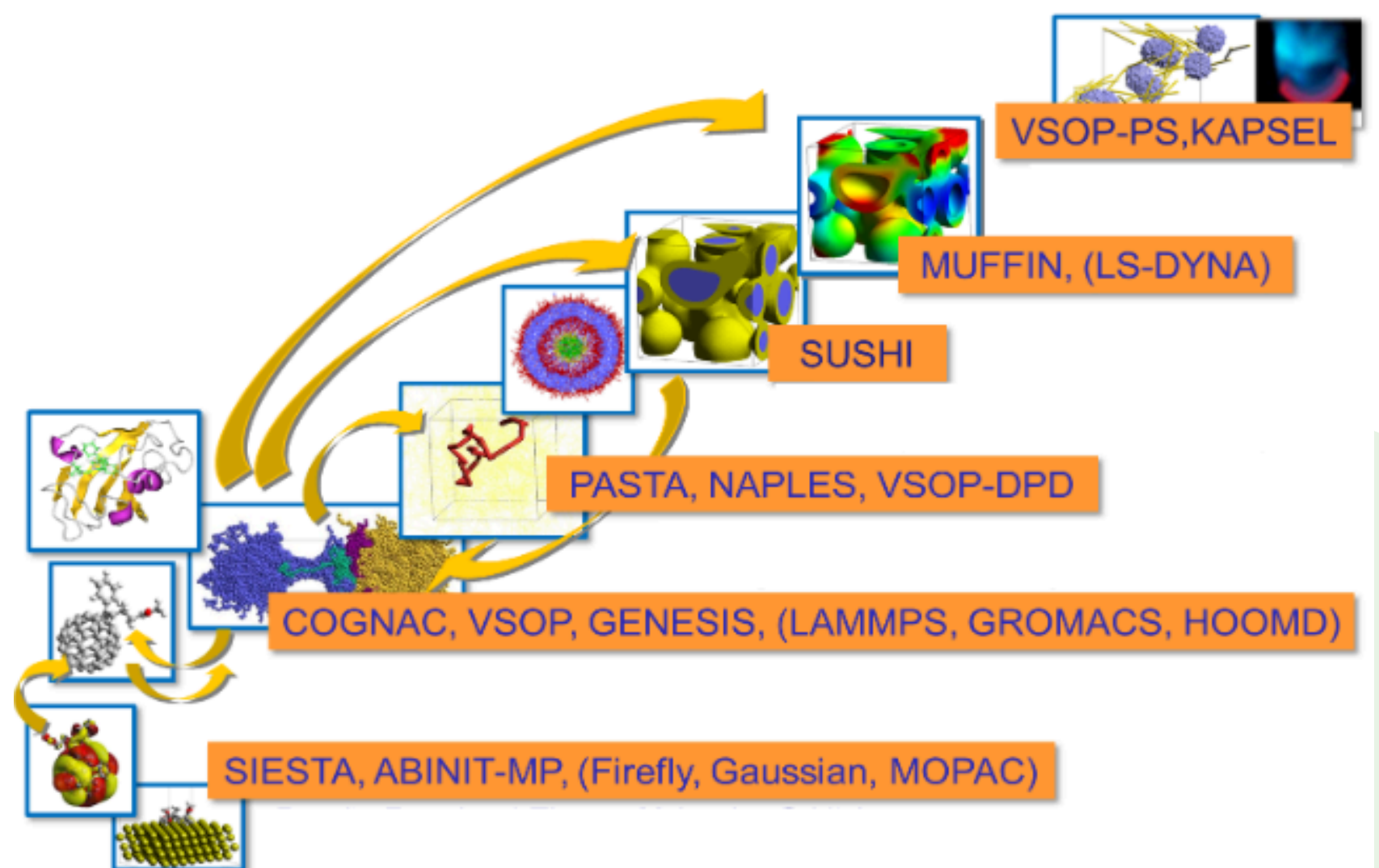
Fine-tune mechanical and chemical properties without costly trials.

Biomolecules

Model interactions in biological systems.

POLYMERS & COMPOSITES

Molecular design, rheology and processing, sustainable formulations.



Accelerate Advanced Polymer Innovation

MOLECULAR DESIGN & THERMODYNAMICS

Predict Material Properties

- Calculate key material properties from chemical structure: glass Transition Temperature (T_g), density and mechanical moduli (e.g. Young's modulus).
- Evaluate solubility parameters and thermodynamic compatibility: predicting stability or phase separation in polymer blends.

RHEOLOGY & PROCESSING PERFORMANCE

Optimize Manufacturing

- Simulate shear thinning, melt viscosity, and viscoelastic behavior under processing conditions.
- Bridge the gap between molecular architecture (e.g. long-chain branching, molecular weight distribution) and polymer rheology during processing.

ADVANCED & SUSTAINABLE MATERIALS

Accelerate Green Innovation

- Screen bio-based polymers and recycled blends for compatibility and property retention before compounding.
- Optimize barrier properties (e.g., permeability of O_2 , CO_2 and moisture) for advanced packaging, thin films and protective coatings.