

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

Is the conductive carbon dispersed, or clumping in the electrode slurry? How do electrolyte molecules arrange themselves on the surface?

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

Adhesives, Paints & Coatings

Fine-tune mechanical and chemical properties without costly trials.

Biomolecules

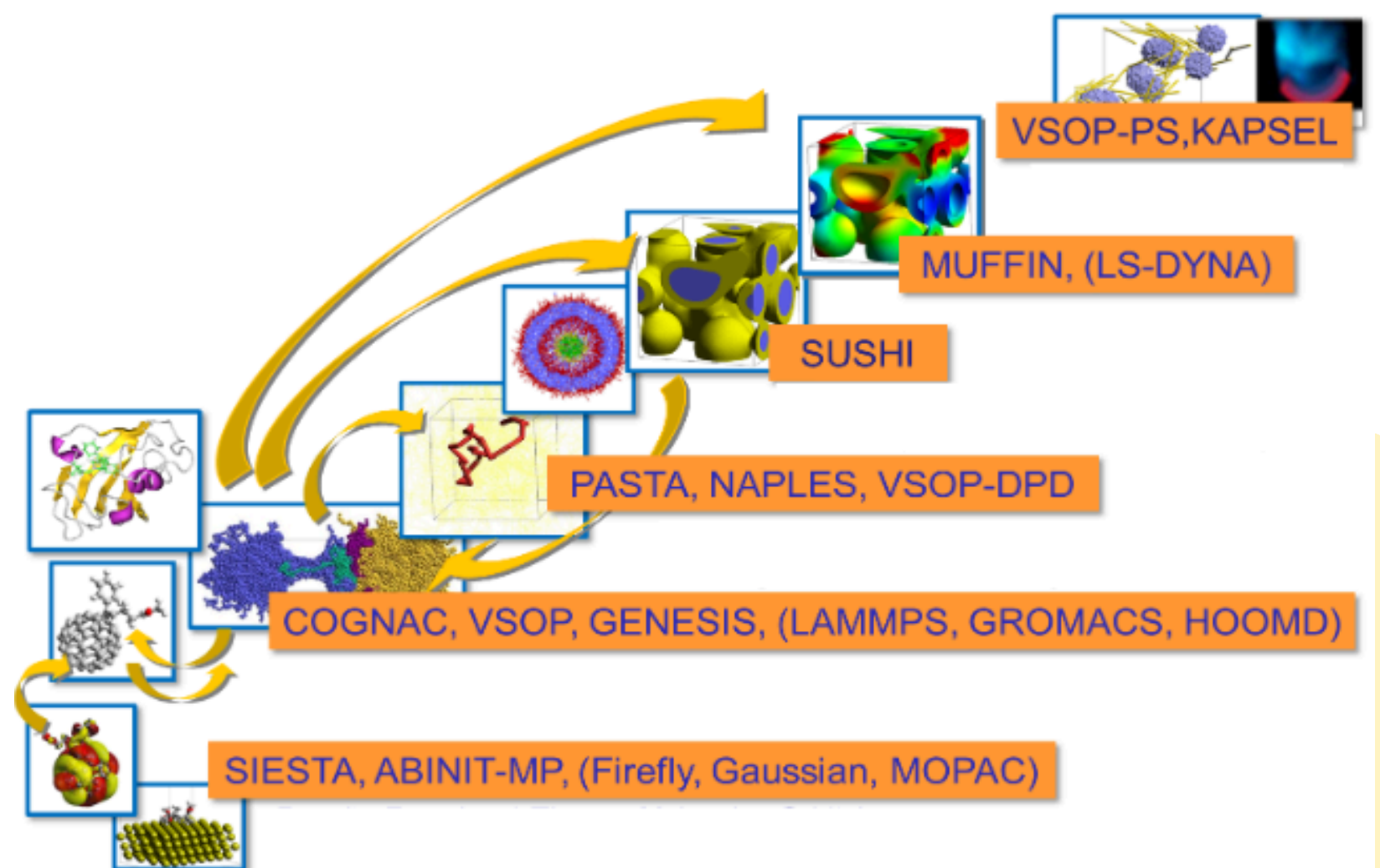
Model interactions in biological systems.

Polymers & Composites

Optimize formulations for strength, weight, and sustainability.

ENERGY & BATTERIES

Electrolytes, binders, separators and composite electrodes.



Battery Materials, from Molecule to Microstructure

ELECTROLYTE & ION TRANSPORT

Transport-Related Properties

- Ion diffusion and ionic conductivity from molecular dynamics.
- Viscosity and density across temperature, solvent ratio and salt concentration.
- Solvation structure, and solvent-salt-additive compatibility.

MOLECULAR STRUCTURE AT INTERFACE

Interface Impact

- How electrolyte molecules arrange and orient near a solid surface.
- Organic-inorganic interfaces: polymer on oxide, carbon and metal.
- Additive adsorption, interfacial tension and compatibility.

COMPOSITES, BINDERS & MESOSTRUCTURES

Mesoscale Mechanics

- Dispersion versus agglomeration of conductive additives and fillers.
- Mesoscale phase separation and porous morphology formation.
- Binder viscoelasticity, and local stress on the simulated microstructure.