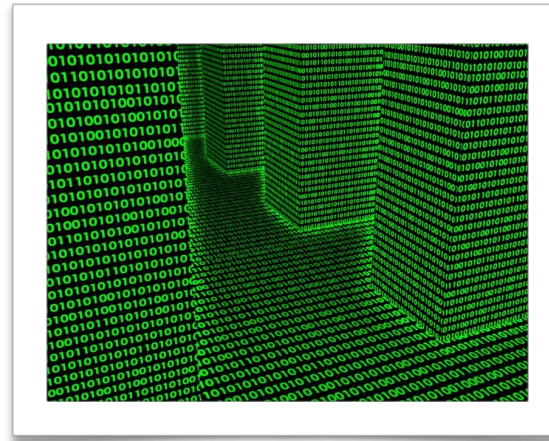


Rational alloy design - ALLDESIGN

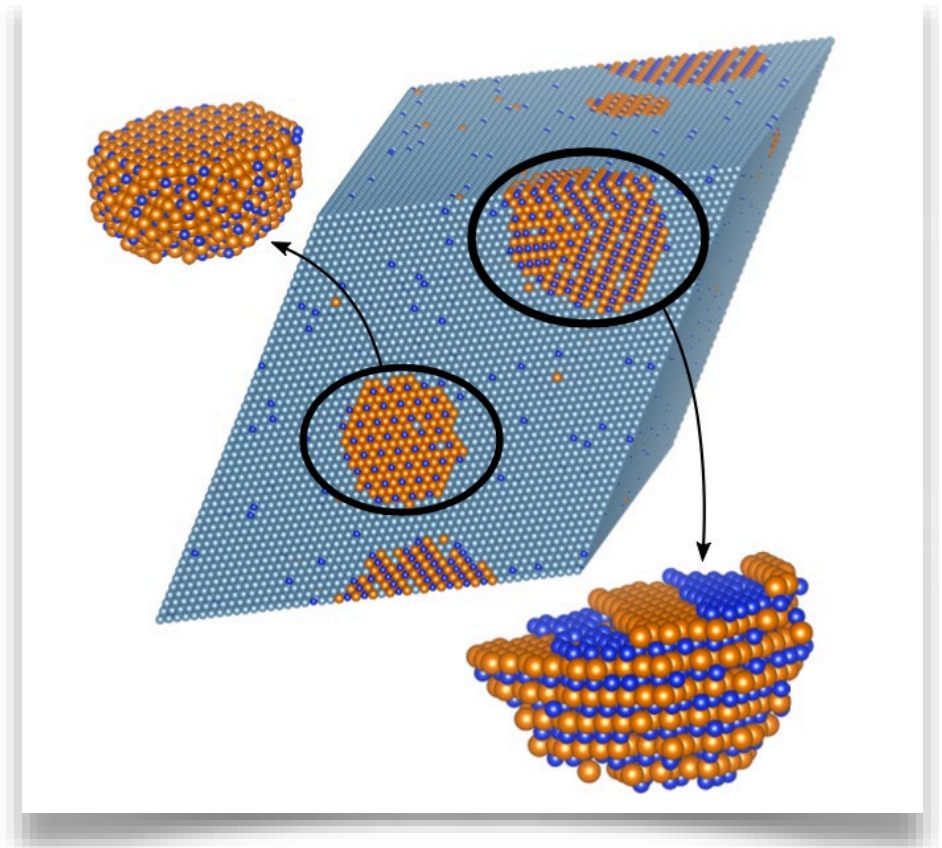


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 **ALLDESIGN**



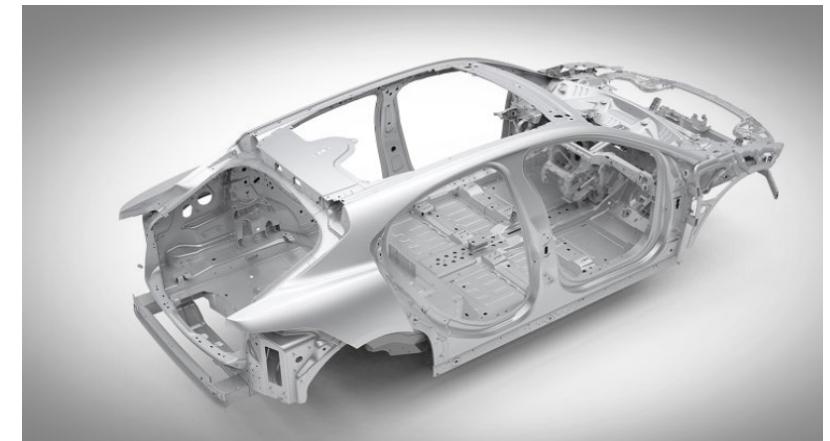
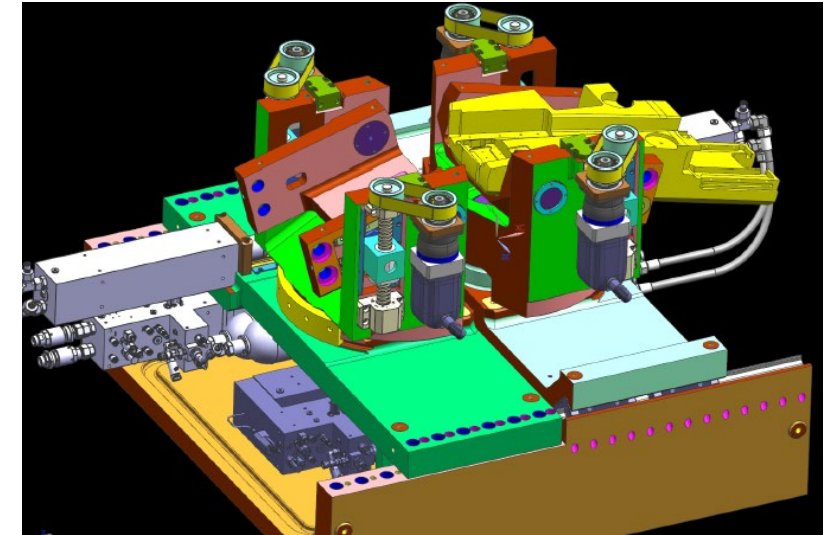
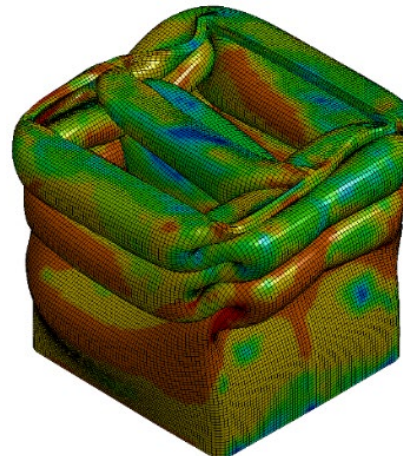
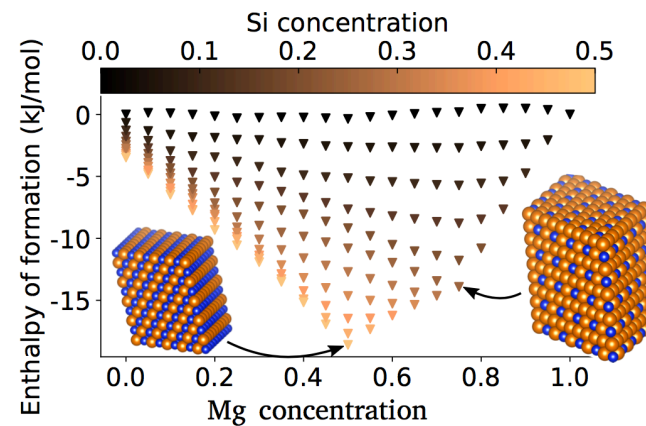
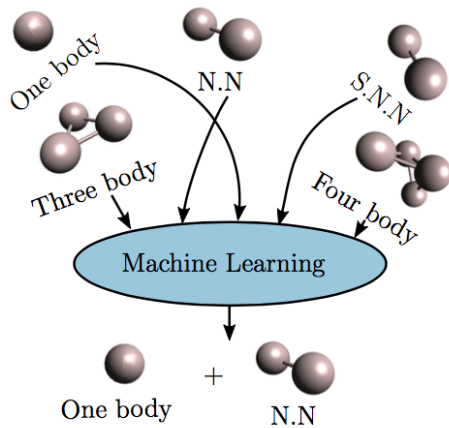
Big picture: From atoms to car parts

Paradigm change in materials design – not only for aluminum!

Time-independent Schrödinger equation (general)

$$\hat{H}\Psi = E\Psi$$

$$E = E_0 + V_0 \sum_i \sigma_i + V_1 \sum_{\langle ij \rangle} \sigma_i \sigma_j + \dots$$



Objectives

- Create **digital materials design platform** for alloy design with multiscale workflows
- Identify **key parameters** between different scales and make **digital tools** for communicating between these levels
- Calculate **evolution of microstructure** and associated properties in Al-alloys, transfer this information to manufacturing processes along processing chain
- **Connect tools in industry** by bringing in basic and fundamental knowledge
- Establish **common language** for describing all relevant materials data across scales and processes

