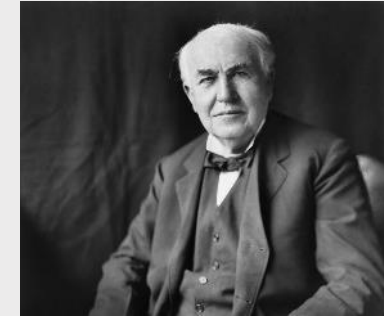Greg Odegard

Edisonian approach to materials development

- Trial-and-error
- High material and labor cost
- Difficult testing in extreme environments
- Lack of methods to full probe molecular scale behavior

"I have not failed. I've just found 10,000 ways that won't work" – Thomas Edison

Computational approach to materials development

- Efficiently explore design space
- Predict material behavior under a wide range of conditions
- Provide physical insight into observed behavior

SUPERIOR high-performance computing cluster

Computational modeling → **Structure-property relationships** → **Rapid material development**

Projects

Conformable CNG tank

Computational modeling of internal stresses

Epoxy molecules

Graphene

O atom
C atom
H atom

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CENTER FOR
NOVEL HIGH VOLTAGE/TEMPERATURE
MATERIALS AND STRUCTURES