

# **Nanoscale Science and Engineering Education Workshop**

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# Virginia Science Standards of Learning

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- Revision of the Science Standards of Learning
- Nanoscience content in the Science Standards
- Engaging schools and teachers
- Concrete actions and needs

**VIRGINIA IS FOR  
SCIENCE LOVERS<sup>®</sup>**



## Revision of the Science Standards of Learning

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- Virginia Science Standards of Learning and Curriculum Framework reviewed every seven years
- Public process that includes teachers, district science leaders, scientists, and industry leaders.
- Board of Education approved
- Serve as the foundation science curriculum for each of the 132 Virginia school divisions





# Nanoscience content in the Virginia Science Standards and Curriculum Framework

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K-12

- Current applications of science

Grade 5, Physical Science, Chemistry, and Physics

- Size and Scale
- Structure of Matter
- Forces and Interactions
- Quantum Effects
- Size-Dependent Properties
- Models and Simulations



# Engaging Schools and Teachers

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*Leadership of the MathScience Innovation Center has resulted in...*

- Nano Fellows Institutes
- Imagine Nano website
- *Big Ideas of Nanoscience* curriculum grades 6-12 with more than 50 lessons and activities
- MSIC weekday services, Summer Regional Governor's School, Camp Innovation

Presentations to science leaders and webinars for teachers

# Needs and Actions – Taking It to Scale

- Leadership and Awareness
  - Bringing industry and education together
  - Basic and advanced understanding of nanoscale science and engineering education
- Building a Community of Practice
  - Professional development
    - Nano Fellows – building leadership
    - Classroom teachers – elementary – high school
  - Building Talent
    - Internships for teachers and students
- Appropriate Curriculum Resources
  - Curriculum materials developed that are correlated to the Virginia Science Standards of Learning
- Advisory Board/Council/Foundation
- Grants funds
- Industry partners willing to open their doors
- Investments in development