

Nanomaterials, Scale, and Surface-Effect Models

g12_u04_w15

Purpose and boundary

Interpret original fictional surface-area/scale cards. No material synthesis, device construction, chemical handling, exposure, or product-performance claim is requested.

Targets: I can explain qualitative surface-area/scale trends and distinguish a model from a broad claim.

Vocabulary: nanoscale, surface area, volume, ratio, model, control, uncertainty. **Prerequisites:** geometry, graph reading, materials models.

1. What does nanoscale mean in a model?

2. Why does scale need units?

3. What is surface area?

4. What is volume?

5. Why can surface-area-to-volume ratio change with size?

6. What trend may a fictional scale card represent as size decreases?

7. Why does that trend not prove every surface effect?

8. Name one condition a surface card may omit.

9. What does a control comparison help assess?

10. Why is a small scale label not itself a hazard claim?

11. What is a qualitative trend?

12. Why should a graph axis be read before a trend claim?

13. Name one alternative explanation for a stated surface trend.

14. What evidence is needed before a performance claim?

15. Why can two materials at similar scale behave differently?

16. Give one non-color-only access feature for a scale diagram.

17. State one prohibited product claim from a fictional scale card.

18. Compare a surface model with a measured observation.

19. Write a cautious statement about a fictional decreasing-size trend.

20. Write a two-sentence bounded conclusion for a surface card.
