Electrochemistry—
National Science Education Standards

Experiments and Demonstrations

Content Standards	Introduction to Electrochemistry	Measuring Cell Potentials	Quantitative Electrochemistry	Electrolysis Reactions	Microscale Electrolysis	Hoffman Electrolysis	The Tin Man	Orange Juice Clock	Basic Electrophoresis	Lemon Battery Contest
Unifying Concepts and Processes										
Systems, order, and organization										
Evidence, models, and explanation	✓	✓		✓	✓	✓		✓	✓	✓
Constancy, change, and measurement		✓	✓			✓				
Evolution and equilibrium										
Form and function										
Science as Inquiry										
Identify questions and concepts that guide scientific investigation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Design and conduct scientific investigations	✓	✓	✓	✓	✓	✓		✓		✓
Use technology and mathematics to improve scientific investigations		✓	✓			✓				✓
Formulate and revise scientific explanations and models using logic and evidence	✓	✓		✓				✓		✓
Recognize and analyze alternative explanations and models										
Communicate and defend a scientific argument										
Understand scientific inquiry	✓	✓	✓	✓						✓
Physical Science										
Structure of atoms										
Structure and properties of matter		✓		✓			✓	✓	✓	✓
Chemical reactions	✓	✓	✓	✓	✓	✓	✓	✓		✓
Motions and forces	✓								✓	
Conservation of energy and the increase in disorder										
Interactions of energy and matter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Content Standards *(continued)*

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Science and Technology										
Identify a problem or design an opportunity										✓
Propose designs and choose between alternative solutions										✓
Implement a proposed solution										
Evaluate the solution and its consequences										
Communicate the problem, process, and solution										
Understand science and technology		✓	✓					✓	✓	✓
Science in Personal and Social Perspectives										
Personal and community health										
Population growth										
Natural resources										
Environmental quality										
Natural and human-induced hazards										
Science and technology in local, national, and global challenges										
History and Nature of Science										
Science as a human endeavor		✓								✓
Nature of scientific knowledge										
Historical perspectives	✓		✓			✓	✓		✓	