

# **IDEAS FOR GK-12 LESSONS IN THE CHEMISTRY CLASSROOMS**

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Unit	Lesson Topics / Ideas for Connections
Introduction to Chemistry	Introduce Project Scale – Moving cells and atoms Graph Analysis & Interpretation, Noise
Atoms and Elements	<b>Module -Enzymes, Collisions, Kinetics</b> Demo of Fluorescence (LEEDS) <b>Instruments to observe structure</b>
Nuclear Chemistry	Use of radioisotopes in medicine Nuclear Radiologist demo

Unit	Lesson Topics / Ideas for Connections
Periodic Table	Metals, nonmetals, and semimetals – conductivity and properties <b>Silicon doping with Boron and Phosphorous (why we don't use other elements)</b>
Chemical Bonding	Kinds of bonds involved in project
Mole	Common measurements used in the lab Practice problems based on actual project experiments

Unit	Lesson Topics/Ideas for Connections
CHEMICAL REACTIONS	<p data-bbox="749 225 1798 511">Metals/Nonmetals/Semimetals: silicon network solid formations, doping with P to add electrons, doping with B to remove electrons,</p> <p data-bbox="749 611 1624 739">5 types of reactions: silicon wafer fabrication</p> <p data-bbox="749 761 1193 825"><math>\text{Si} + \text{O}_2 \rightarrow \text{SiO}_2</math> or</p> <p data-bbox="749 839 1306 903"><math>\text{Si} + \text{H}_2\text{O} \rightarrow \text{SiO}_2 + 2\text{H}_2</math></p> <p data-bbox="749 989 1773 1118">Wet Etching of Photoresist for transistor fabrication</p>

Unit	Lesson Topics/Ideas for Connection
STATES OF MATTER	Intermolecular Attraction: the biochemistry and enzyme activity in STEM research
SOLUTIONS & MOLARITY	Concentration: Weight by volume, % by volume and molarity for agrose gels and redox reactions
ACIDS AND BASES	pH Buffers: PBS and TBS activity with tryosinase, glucose oxidase, gamma immunobutanic acid pH effects on Redox/Electrochemistry
REDOX / ELECTROCHEMISTRY	<b>Electrochemistry: potentiostat lab and cyclic voltammetry</b>