Making Green Chemistry Available to All:

“Bringing the Wonder of Science from Elementary to Higher Education Learners”

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Why Science in elementary schools?

We should teach reading, writing and math, right.
The elementary educational environment plays a key role in student learning.
Elementary students have the capacity to engage in scientific and engineering practices as they develop conceptual understandings over time.
Elementary students can and should engage in science within the broader community of science.
There must be adequate time in every school day to engage elementary students in high-quality science instruction that actively involves them in the processes of science.

<table>
<thead>
<tr>
<th>Grade Span</th>
<th>Assumed Minutes per Day (Hours per week)</th>
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</thead>
<tbody>
<tr>
<td>K–2</td>
<td>25 minutes/day (~2 hours/week)</td>
</tr>
<tr>
<td>3–5</td>
<td>35 minutes/day (~3 hours/week)</td>
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<tr>
<td>6–8</td>
<td>55 minutes/day (~4.5 hours/week)</td>
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<tr>
<td>9–12</td>
<td>65 minutes/day (~5.5 hours/week)</td>
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What are some on the Challenges?
How can we help?
Exothermic and Endothermic Reactions

Teacher Background Information:
Many teachers use the calcium chloride and ammonium nitrate reaction to show exothermic and endothermic reactions. This method uses a catalase, a common enzyme found in nearly all living organisms. When catalase is exposed to oxygen, it catalyzes the decomposition of hydrogen peroxide to water and oxygen. Catalase has one of the highest turnover numbers of all enzymes; one molecule of catalase can convert millions of molecules of hydrogen peroxide to water and oxygen per second. In this procedure we will use liver, but you can easily substitute a potato, kiwi, peaches or many other forms of catalase in your classroom.

My Temperature is Rising, or is it?

Teacher Background and Overview:
In this procedure students will investigate changes in energy, particularly through the measurement of heat energy, as well as the difference between a physical change and a chemical change. Students will need background knowledge of how to determine this difference, specifically the definitions of the terms physical and chemical changes and endothermic and exothermic reactions.
Don’t Forget our Students who have Special Needs.
Thoughts - Ideas - Questions?
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References: