



創造性の発現には相当量の語彙の蓄積が必要だ。

湯川秀樹（ノーベル物理学賞受賞）

It's Thermal
Reaction !

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Science English Lab. 開催 !

7月26日にSSHラボ室でサイエンスイングリッシュ・ラボを開催しました！この企画は本校の理科の先生とALTの先生がコラボして創り上げた企画で、英語でサイエンスを学ぶものです。今年は「Making Biodegradable Plastics（生分解性プラスチックをつくる）」と「Thermal Reaction: "Warm and

Cool"（反応熱“温かいと冷たい”）」という2つのテーマで実験とその背景にある理論を学びました。参加した皆さんは、英語に物怖じせず、積極的に質問・議論をしながら、主体的に参加していて、とても素晴らしいかったです。せっかくなので、今回の記事は英語で紹介していきます！

▲ Ryan先生が実演しながら現象の理論を説明して이었습니다

Making Biodegradable Plastics



▲ Making Biodegradable Plasticsの実験の様子

Back ground

Many environmental problems are caused by the plastics that are all around us. For example, our oceans are polluted by things like plastic bags and other wastes that do not decompose naturally. Therefore, new plastic materials are being developed to replace petroleum-based plastics. These plastics are called biodegradable plastics because they can be broken down naturally.

Theory

Milk is composed of about 90% water, and the other components are protein, fat, and minerals. Most of the protein is a protein called casein. Casein is made solid by the acid contained in vinegar. Furthermore, when heat is applied to it, it dehydrates and the casein becomes strongly bonded. This plastic is called casein plastic, and it is one of the biodegradable plastics.

Thermal Reaction: "Warm and Cool"



▲ Thermal Reactionの実験の様子

Back ground

In our daily lives, we use a variety of science and technology. The purpose of this experiment is to learn about the mechanism of chemical reactions by making a heat pack.

Theory

When iron comes in contact with oxygen, it combines with it, and this is called *oxidation*. Heat is generated when oxidation occurs. For example, the oxidation of paper generates intense heat, while the oxidation of iron and other materials generates heat slowly. The saline solution in the envelope will promote oxidation. Activated charcoal helps to store air. Iron powder has a larger surface area due to its smaller grains. In the envelope, heat is generated because a lot of small iron particles are quickly combined (*oxidation*) with the air contained in the activated carbon by the saline solution.