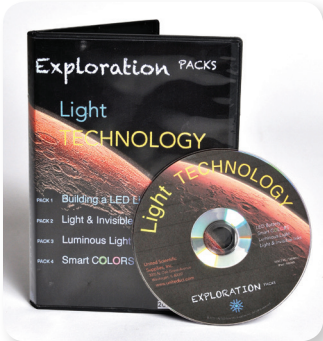
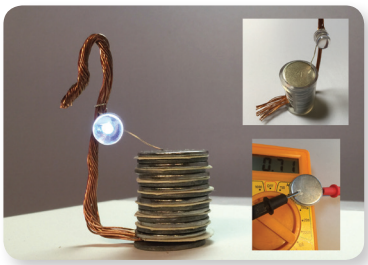
UNITED SCIENTIFIC SUPPLIES, INC.

Light Technology Exploration Pack Sets

NEW



DVD is included with Exploration Pack Sets (10 of each activity or complete set of 4).



LED Battery Exploration Pack includes materials to construct a battery that illuminates an LED.

This set of four activities investigates how light is used in technology products. Each activity has deep content and unique materials so users can explore science concepts using STEM methodology. Pack Sets, designed for use by an entire class, include 10 sets of hands-on materials for one activity and a DVD with extensive content for all four activities.

The DVD contains:

- Teacher and Student Guides
- Background Information
- Powerpoints and Videos
- Glossary
- Worksheets

Individual Exploration Packs without the DVD are also available - these contain printed instruction sheets highlighting one model experiment. The Exploration Pack Set includes all four individual hands-on Exploration Packs and the DVD.

Item No.	Description
AISLBEP	Building an LED Light Battery Exploration Pack
AISLIEP	Light & Invisible Ink Exploration Pack
AISLLEP	Luminous Light Exploration Pack
AISSCEP	Smart Colors Exploration Pack
AISLBES	LED Battery Exploration Pack Set of 10 with DVD
AISLIES	Light & Invisible Ink Exploration Pack Set of 10 with DVD
AISLLES	Luminous Light Exploration Pack Set of 10 with DVD
AISSCES	SMART Colors Exploration Pack Set of 10 with DVD
AISLTEP	Light Technology Exploration Pack Set of 4 with DVD

Light & Invisible Ink Exploration Pack contains a UV flashlight, invisible ink, a steel nib pen, and dipping wells.

Smart Colors Exploration Pack contains two thermal ink pens, chromatography paper, marking cards, and a dipping well.

Luminous Light Exploration Pack contains a UV flashlight, red laser diode pointer, three colored acetate sheets, three flourescent ink pens, and dipping wells.

Build an LED Battery Exploration Pack Set

Constructing an LED Light Battery

(GUIDED – MODEL EXPERIMENT)

Students view a guide image of a "quarter battery" with an illuminated LED light. They will use this image as a design prototype to construct their own pile battery that lights a 3.5V (20mA) LED lamp using zinc and nickel planchets. After the battery is assembled, students will evaluate its power performance and energy density characteristics.

Comparing Acid and Alkaline Electrolytes

(GOING FURTHER ACTIVITY)

Students investigate the difference between an acid electrolyte and an alkaline electrolyte in the Ni-Zn battery system. They are asked to design an alkaline Ni-Zn pile battey and compare its energy performance characteristics to that of the previously constructed acid pile battery. From this comparison, students determine which electrolyte type (acid or alkaline) provides for a higher energy density (Wh/Kg) at the same output voltage.

Investigating Light and Invisible Inks Exploration Pack Set

Using Near-UV Light to Image a Commercial Invisible Ink

(GUIDED – MODEL EXPERIMENT)

Provides students with experience in understanding the physical properties of certain colored dyes, specifically how they fluoresce under ultra-violet lighting and can be used as invisible inks.

Designing a Security Document Using a Self-Made Invisible Ink

(GOING FURTHER ACTIVITY)

Students design their own security document using a self-made invisible ink.

Investigating Luminous Light Exploration Pack Set

Understanding Why Fluorescent Dyes Glow

(GUIDED – MODEL EXPERIMENT)

Provides students with experience in understanding the visible spectrum, light energy, and fluorescene.

Using UV Light to Hunt for Fluorescent Objects

(GOING FURTHER ACTIVITY)

Students engage in OPEN inquiry-driven independent explorations of various types of fluorescent materials.

Investigating Smart Colors Exploration Pack Set

Designing a Smart Thermometer

(GUIDED – MODEL EXPERIMENT)

Provides students with experience in understanding thermochromism - the property of substances to change color due to a change in termperature. Students design an investigative technique using thermochromic ink that will determine if a microwave is producing uniform heating over its revolving food support surface.

Designing a Freshness Indicator

(GOING FURTHER ACTIVITY)

Students engage in OPEN inquiry-driven independent explorations to investigate the property of halochromism - the property of substances to change color when pH changes occur. As vegetables degrade, excessive organic acids are produced and pH falls, with the food being in an over-ripened condition. Students will choose a natural pH indicator and design a test strip that registers a change in pH that indicates over-ripening in vegetable packages.

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