RESEARCH OUTPUT

Kyoto University Merchandise?!

Another Use for Research Results

When you visit Kyoto University, why don't you buy some merchandise based on the results of research undertaken at the university? Merchandise is available from the gift shop located in the Clock Tower Centennial Hall, the "Musep" gift shop in the Kyoto University Museum, and selected co-op shops on campus.

WEB www.s-coop.net/goods/ (Kyoto University Gift Shop, Japanese Only)
musep.jimdo.com (Muzep, Japanese Only)

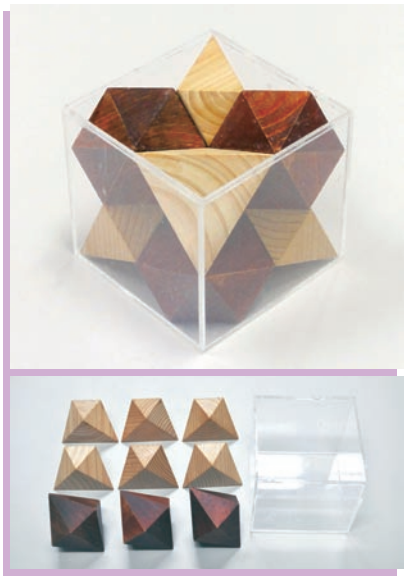
GEOMETRY

Imaginary Cubes

Imaginary cubes are objects with square projections on three orthogonal planes that look like cubes. Dr. Hideki Tsuiki and his colleagues discovered imaginary cubes with unusual properties, and used them as the basis for the design of two types of puzzle.

The objective of the wooden puzzles is to put nine imaginary cube pieces into a box, and the objective of the paper puzzles is to assemble imaginary cube objects which are composed of nine cubes. As well as being fun, Dr. Tsuiki hopes that people will be inspired by the mathematical beauty which exists behind the puzzles.

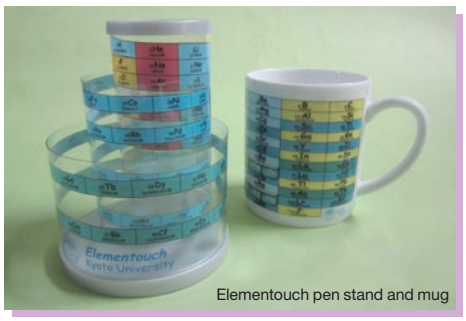
Dr. Hideki Tsuiki
Professor, Graduate School of Human and Environmental Studies
www.i.h.kyoto-u.ac.jp/~tsuiki



CHEMISTRY

21st Century Periodic Table: The Elementouch®

The 3D layout of element symbols resolves some shortcomings of the widely used current table.



Elementouch pen stand and mug

It is wonderful that the atomic building blocks of all matter, the elements, can be arranged in one table: the periodic table of the elements. The long-period periodic table currently used worldwide was invented in 1905 by Alfred Werner, who later won the Nobel Prize in Chemistry. Prof. Yoshiteru Maeno has invented a new periodic table with a three-dimensional layout called the Elementouch®, which resolves some shortcomings of Werner's table. Firstly, all of the element symbols are arranged continuously without any gap. Secondly, elements with similar ionic properties are grouped together in the same columns.

In addition, when viewed from the top, the Elementouch depicts different atomic orbitals around the nucleus. If Werner's periodic table is a "world map" of the elements, the Elementouch could be described as a "globe."

The Elementouch has been used at a variety of science education events. It also features on several Kyoto University products, such as a pen stand, mug, t-shirt and towel, which are available from Kyoto University stores as well as various science museum shops.

Detailed description: www.ss.scphys.kyoto-u.ac.jp/elementouch/index.html
YouTube site: www.youtube.com/watch?v=Hsll4KhPlKM
KU Co-op HP: rcpt.kyoto-bauc.or.jp/goods/kyodai_goods/indicate.php?mode=top&category=1

Dr. Yoshiteru Maeno *Professor, Graduate School of Science*
www.ss.scphys.kyoto-u.ac.jp/person/maeno/index_e.html

Algebra

Prime Number Ruler

The Prime Number Ruler is a popular item that has been sold at Kyoto University CO-OP stores since May 2013. In a sense, the ruler is difficult to use because only prime numbers are marked on it. However, this novelty appeals to a lot of people, so the CO-OP has to limit sales of the ruler to one per customer. The original idea was developed in a class of the Kyoto University Summer Design School 2012. The class was operated by the FUBEN-EKI Institute, an organization run by Kyoto University researchers. The institute's name stands for "FUrther BENEfit of a Kind of Inconvenience." The price of the ruler is also a prime number. How much will it be after the sales tax goes up?

Dr. Hiroshi Kawakami *Associate Professor, Graduate School of Informatics*
www.symlab.sys.i.kyoto-u.ac.jp/~kawakami/index.html

Disaster Prevention

Gaming & Simulation for Disaster Damage Reduction

Developing new disaster education materials: "Crossroad" & "Individual Drill".

Visualization of evacuation procedure, red line indicating the path taken to reach the current location, and dark blue zone indicating the area inundated by simulated tsunami.

The disaster simulation game "Crossroad" is a group game which aims to have players think about disasters not as others' business, but as their own business, and exchange their opinions with others. In this game, each player answers "yes" or "no" to questions with two choices which deal with common dilemmas in disasters. "Individual drills" are tsunami evacuation drills that are carried out by each person individually. The evacuation procedure is captured on video by local school children, the results are analyzed, and messages from the children are passed to the drill participants. Furthermore, the evacuation procedure is visualized through computer graphics that superimpose a simulation of tsunami inundation.

Dr. Katsuya Yamori
Professor, Disaster Prevention Research Institute
www.drs.dpri.kyoto-u.ac.jp/staff/yamori/ www.drs.dpri.kyoto-u.ac.jp/gsp/