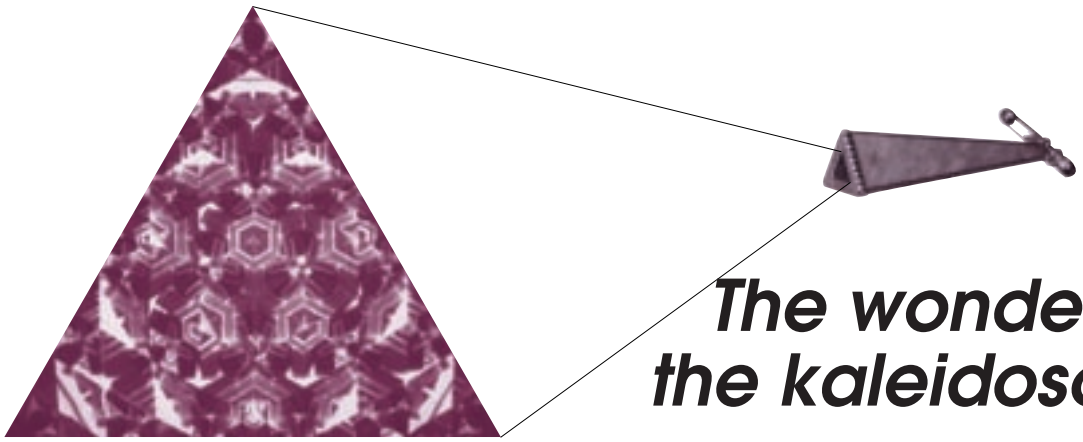
Theme Park



The wonder of the kaleidoscope

Imagine a hole in the floor of an old wooden school building, or a small crack in between two wall panels. I'm sure many of us can recall as children being filled with a sense of curiosity when peering into tiny, unknown spaces. But it's not just children who have this curiosity—almost anyone who notices a small crack or hole is curious about what's inside of it. In the world of science, this kind of curiosity once led Scottish physicist Sir David Brewster to deviate from his normal research and accidentally develop the kaleidoscope—a device capable of creating whole new worlds before your eyes. Building on his discovery, he also invented the stereoscope, which has forever etched his name in the world of 3D display technology.

Everyone knows it's the kaleidoscope's mirrors that trick you into thinking you're seeing a gigantic, elegant flower, instead of the inside of a tube. But how is it made?

First, you make a triangle tube by putting three pieces of long glass together setting the mirror surface inside the tube. Then you cover one end with two pieces of frosted glass and in between them put pieces of colored glass, beads, oil or anything you can imagine. At the other end you make a small peephole. The phenomenon of a kaleidoscope is based on reflections from the three mirrors (see figure 1). Even if you know something about how it works, when you look inside a kaleidoscope you probably still can't believe the amazing images you see. And it's so symmetrical, you might even wonder if it's really analog. In a simple tube, you see an endless universe filled with a myriad of light and color.

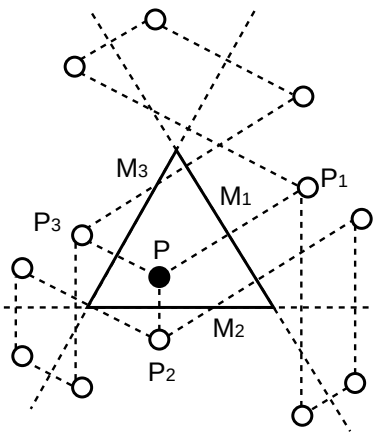
Modern kaleidoscopes employ precision-surface coated mirrors having higher reflectivity than normal back coated mirrors, whose surface is just normal glass. Precision-ground coated mirrors are used in telescopes, copy machines and high-image-density projectors. By using them in kaleidoscopes we can enjoy clearer, more beautiful images.

Mr. Kouji Yamami is one of the few kaleidoscope artists in Japan. Known for his original and creative use of stained glass, he supports kaleidoscope enthusiasts by planning special exhibitions and helping other Japan Kaleidoscope Club members to make their own kaleidoscopes.

These days there are even computer games that can recreate a kaleidoscope image and allow you to manipulate it. And this has raised the awareness of kaleidoscopes as a way to appreciate art. I personally think that kaleidoscope images resonate with some innate sense of beauty.

In the United States, kaleidoscopes have been clinically proven to be effective stress reducers and many hospitals give them to patients for this very purpose.

This ever-changing expression of beauty that Brewster found simply by pursuing his sense of curiosity has resulted in technology now used in art and medicine. What other fields will the kaleidoscope one day be used in?



■ Figure 1 The theory of kaleidoscope

Small colored pieces (P) put between layers of frosted glass reflect off mirrors (M1, M2, M3) to create multiple images (P1, P2, P3, etc.) By rotating the kaleidoscope, the small colored pieces (P) shift and move, causing the reflected images to constantly change.