

Structural Colors Research

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1. Introduction

What are structural colors?

Structural colors show different colors according to the properties of light.

If we see objects which have structural colors from different angles, they show various colors.

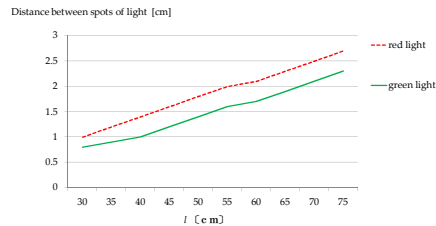
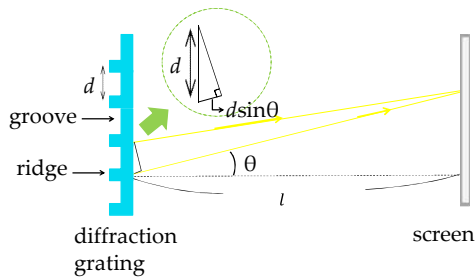
For example, soap bubbles and the sky have structural colors.

2. Purpose

To understand structural colors.

In this research, 3 structures among many were chosen.

3. Diffraction Grating



$$d \sin \theta = m \lambda$$

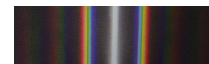
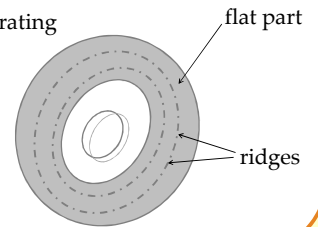


Figure 1 diffraction grating



4. Light-Scattering

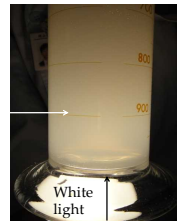


Figure 2 measuring cylinder

Water used to wash rice



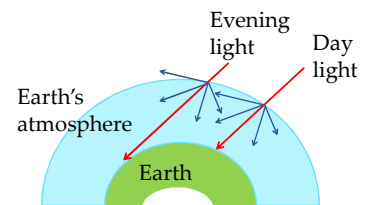
top part



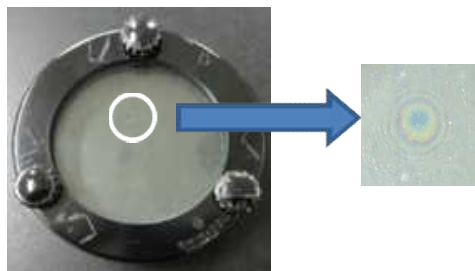
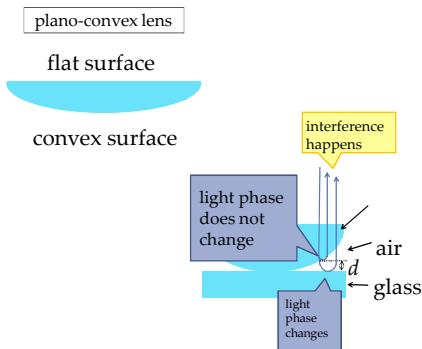
bottom part



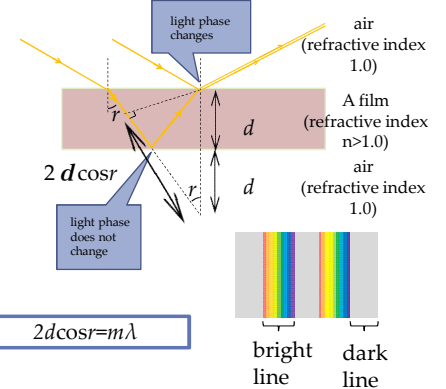
Figure 3



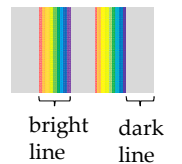
5. Newton Ring



Soap Bubble



$$2d \cos r = m \lambda$$



【Reference】

Figure 1 Yasunari Hoshino, Photoscience Pictorial Records of Physics, Sukensyuppan p.78

Figure 2 Masakazu Kunitomo, Physics I, Sukensyuppan p.179

Figure 3 Yasunari Hoshino, Photoscience Pictorial Records of Physics, Sukensyuppan p.75