

Experiments Outline

- **Part 1:** Property of light and wave:
 - Introduction: What is light and the history of light observation.
Light is electromagnetic wave, which has several properties:
 - Interference: introduction.
Experiment 1: Microwave used to determine speed of light.
 - Diffraction: introduction.
Experiment 2: Determine the size of hair.
 - Polarization: Introduction.
Experiment 4: Magic box Experiment 3: Examine stress in materials
 - Common light: the sunlight
Spectrum: Introduction.
Experiment 5: light spectrum.
 - UV and IR: Introduction to unseen lights.
Experiment 6: UV filter using UV bead. Experiment 7: IR camera determines heat flow.
- **Part 2:** Geometric optics:
 - How light travel in space: Introduction.
 - Reflection and Refraction: Introduction, demonstrate using water and light beam such as laser.
Experiment 8: Using refraction to form a curve in water tank.
 - Image and Lens: Introduction.
Experiment 9: Observe lens on the rail-track.
Experiment 10: Imaging with pinhole.
Experiment 11: Camera design
 - Combination of lens: introduction.
Experiment 12: Microscope. Experiment 13: telescope.
 - Eye and resolution: Introduction
Experiment 14: Observing resolution with 2 lines.