TABLE 1: A three-day lesson on iridescence, which can be done in art class, in science class, or as a collaboration between art and science teachers. Prior to this lesson sequence, students have developed ideas about reflection, refraction, absorption, and transmission of light.

Lesson	Objective (and time)	Activity (75–90minute block)	Materials ($70–$120 for 6 classes; after first year consumables = $60)
Day 1: Light waves, colors of light, and iridescence	1. Compare primary colors of light/paint (15–30 minutes) 2. Investigate primary colors of light versus primary colors of paint (pigment), and discover complementary colors (30 minutes) 3. Explore wave interference and relate to the iridescence seen in bubbles. (30 minutes)	• Discuss color using animal and plant examples. • Use CMY rulers to determine complementary colors. • Create color wheel "rules" sheet for color subtraction (pigments/paints). • Investigate color addition (light) with flashlights and RGB film. Specifically, use red + green = yellow. • Calculate color subtraction equations for bluebirds, cardinals, etc. • Try to "add" red and green paint to get yellow. • Articulate how the "rules" sheet can show both color subtraction (for pigments/paints) and color addition (for light). • Blow bubbles: observe/describe iridescence. • Graph constructive and destructive waves.	1. Photos of colorful birds, flowers. 2. Transparent cyan, yellow, magenta rulers; white paper/paper plates. *https://bit.ly/3yZuiry* 3. A flashlight ($10 for 4 pack). 4. Colored cellophane film (red, green, blue) for flashlights (use 3–4 layers of one color per light). 5. Red and green paint, cotton swab "brushes," paper plate palettes. 6. Bubble solution and wands, 1 per group (12 pack, $25, or make your own). 7. Handout: wave interference.
Day 2: Making thin film iridescence	Use the scientific process to make hypotheses and predictions for patterns of iridescence formed on different colored paper, then test your predictions. (50–60 minutes)	• Make thin films on black sandpaper and observe iridescence. • Make thin films on red, blue, and green paper, and compare the iridescent patterns on each. • Create a "rule" (or hypothesis) for the pattern you see. • Use your rule to make a prediction for the pattern of iridescence on yellow paper. • Make a thin film on yellow paper and compare to your prediction. • Decide on an iridescent animal that you would like to make as an art project, and create lots of thin film iridescence papers in the desired colors—hang to dry.	1. A variety of colored construction paper or card stock (red, green, blue, yellow ($10), and black sandpaper (100 grit, $10 for 36 sheets). 2. A plastic dishpan or plastic shoebox—1 per group (4 pack, $18), and a small aquarium fish net (4 pack, $6.99—cheap is fine, any size will do). 3. Clear nail polish (shake well), 1 per group ($2–$10 per 0.5 fl. oz. bottle). *Note:* Review Safety Consideration section. 4. Paperclips and string to hang wet paper.
Day 3: STEAM art project	1. Create a variety of iridescent artwork based on a real animal using the thin films made in Day 2. (30–60 minutes) 2. Wrap-up (15 minutes)	• Use the now-dry iridescent paper "scales" created on Day 3 to create art. Projects can be as simple as gluing iridescent scales onto preformed animal templates, or students could make a 3-D base ("snake head") on which to attach scales, or make an origami dragon head and cover with scales. • Students without an art background may prefer to write a story about an art project from another group. • Model how bubble refraction or nail polish thin film separates wavelengths.	1. Cardstock or matting paper (150-foot roll × 18 inches, $18) to use a base for a 3-D project (instructions for folding origami dragon head and video (*https://bit.ly/3koMJlC*) that shows the creation of the dragon head). 2. Hot glue gun and glue ($10 replacement glue sticks), tape. 3. Paper templates of iridescent animals (glue or tape iridescent scales onto them), scissors, and colored construction paper and glitter foam sheets (10 pack, $10) for accents (like eyes). 4. Your iridescent "scales" made on Day 2.