# CURRICULUM CONNECTIONS: SCIENCE

**HIGH MUSEUM PERMANENT COLLECTION SPOTLIGHT ON**

## ITALIAN RENAISSANCE PAINTINGS AND OIL PAINT PIGMENTS

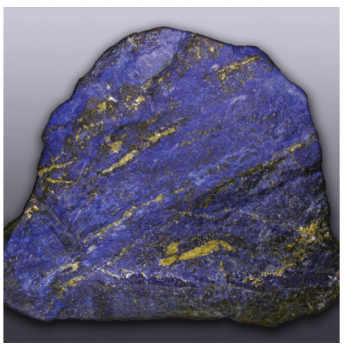
**Il Romanino (Girolamo di Romano)** (Italian, ca. 1484–ca. 1562), *Madonna and Child with St. James Major and St. Jerome*, ca. 1512, oil on panel, High Museum of Art, Atlanta, gift of the Samuel H. Kress Foundation, 58.45

***Use Madonna and Child with St. James Major and St. Jerome* to explore how artists used creative problem solving to find natural resources to make paint pigments.**

### A CLOSER LOOK AND SUGGESTED DISCUSSION QUESTIONS

This painting was created around 1512, almost 500 years ago. During this time, oil paints were not as readily available as they are today. Artists had to create their own paints out of pigments. Pigments were used for more than 30,000 years to make paint. Pigments can come from both natural (tree bark, stones, plant gum, and sometimes toxic chemicals like arsenic and mercury) and synthetic sources.

Oil paint is made by mixing a pigment of a certain color with oil, typically linseed oil. The color blue was difficult to obtain because there are very few naturally occurring blue materials. The only way artists during this time could create the blues see in this painting was from a semi-precious stone called lapis lazuli, found in the region that is now Afghanistan. Afghanistan is almost 4,000 miles from Italy, which made lapis lazuli very expensive.



Lapis lazuli gemstone

Lapis lazuli powder

Give students time to look at the painting. Ask:

- What do you see here?
- Who do you think the people in the painting are? What makes you say that?
- If you could enter this painting, what might you hear? See? Smell? Feel?
- Knowing how expensive and rare lapis lazuli was, ask students to consider what the color blue might represent in the image. Why might the artist have gone through such trouble to obtain the stone?

This image is inspired by the Bible. The person in the middle is Mary, the mother of Christ—the baby sitting in her lap. In the sixteenth century, artists were frequently commissioned to create religious paintings. Ultramarine was symbolic as a "heavenly" and important color.

- How were artists creative problem solvers when it came to finding materials to create pigments for oil paint?

## ADDITIONAL RESOURCES

- Show a clip from The Science Channel's show *How It's Made* to explain how paint is made today.
- To learn more about this painting, visit high.org.

## FURTHER EXPLORATION: ELEMENTARY SCHOOL

What is a gem? Gems can be cut and polished to be used for jewelry and ornamentation.

- Ask students to describe a lapis lazuli gemstone. What color is the gem? How might it feel?
- How would it be different once an artist crushed it into a powder? How would the powder feel or look different from the gem?

## FURTHER EXPLORATION: MIDDLE SCHOOL

- What is the difference between a rock and a mineral?
- What is an organic material, and what kinds of organic materials have been used to make paint?

## FURTHER EXPLORATION: HIGH SCHOOL

Gems are composed of minerals. A mineral is a naturally occurring inorganic solid. Minerals are made up of a particular mix of chemical elements. Lapis lazuli is a compound of sodium, calcium, aluminum, silicon, oxygen, and sulfur.

Investigate other natural and synthetic materials that have been used to make paint. Ask of each:

- Does it have a specific chemical makeup? If so, what is it?
- Do artists still use it today? Why or why not?

## RELEVANT GEORGIA STANDARDS OF EXCELLENCE

### ELEMENTARY SCHOOL VISUAL ARTS

**VAK.RE.1**—Discuss personal works of art and the artwork of others to enhance visual literacy.

**VAK.CN.2**—Integrate information from other disciplines to enhance the understanding and production of works.

### MIDDLE SCHOOL VISUAL ARTS

**VA6.RE.3**— Engage in the process of art criticism to make meaning and increase visual literacy.

**VA6.CN.2**—Utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom

### HIGH SCHOOL VISUAL ARTS

**VAHSVA.CR.5**— Reflect on, revise, and refine works of art considering relevant traditional and contemporary practices as well as artistic ideation.

**VAHSVA.RE.2**—Critique personal works of art and the artwork of others, individually and collaboratively, using a variety of approaches.

**VAHSVA.CN.3**—Utilize a variety of resources to understand how artistic learning extends beyond the walls of the classroom.

### KINDERGARTEN SCIENCE

**SKE2.**—Obtain, evaluate, and communicate information to describe the physical attributes of earth materials (soil, rocks, water, and air).

### 3RD GRADE SCIENCE

**S3E1.**—Obtain, evaluate, and communicate information about the physical attributes of rocks and soils.

### 6TH GRADE SCIENCE

**S6E5:**—Obtain, evaluate, and communicate information to show how Earth's surface is formed.

**b.**—Plan and carry out an investigation of the characteristics of minerals and how minerals contribute to rock composition.

### HIGH SCHOOL SCIENCE

**Chemistry–SC2**—Obtain, evaluate, and communicate information about the chemical and physical properties of matter resulting from the ability of atoms to form bonds.

**Geology–SG6.**—Obtain, evaluate, and communicate information to investigate the distribution, extraction, and use of resources on the Earth and other bodies in the Solar System.