GEOCHEMISTRY WITH THE FAMOS TEAM

TALKING POINTS

1. **Think about what you have learned about ores. Why are mining companies looking for ore deposits and not pure metals?**

2. **Why are ore deposits becoming harder to find?** (See *Introduction to the article*)

3. **What are magmas?** (See *Introduction to the article*). **Why are the FAMOS team so interested in them?**

4. **Jamie says manufacturers will need vast amounts of copper if we are to meet the demands of the renewable energy industry.** (See *Why is the focus on copper?*) **Make a list of the renewable energy technologies you think will need copper.**

5. **As mining companies dig deeper into the Earth's crust in search of ore deposits, they will need sophisticated exploration tools to help them look in the right places.** (See *How will the research benefit the mining industry?*) **Why can't they just dig lots of deep holes?**

6. **Why are the FAMOS team interested in minerals like zircon?** (See *How will the research benefit the mining industry?*)

7. **What do geochemists like Jamie do?** (See *What is geochemistry?*)

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

CHOCOLATE ROCK CYCLE

This activity introduces the rock cycle using chocolate. Chocolate can be broken, ground into small pieces (weathered), melted, crystallised and compressed – just like rocks. Unlike rocks, though, chocolate can undergo these processes safely and at reasonable temperatures!

Materials:

- Blocks of dark and white chocolate
- Aluminium foil and/or aluminium foil cupcake holders
- Hot water and container
- Plastic knife or other simple scraping device

Method for making "sedimentary" chocolate:

1. Scrape some small shavings from your chocolate blocks.

2. Gather these scrapings onto a piece of aluminum foil, fold it over and press down on the chocolate shavings.

3. Open the aluminum package and look at the now squashed chocolate, which is similar to sedimentary rock.

For instructions on how to make "metamorphic" and "igneous" chocolate, visit: https://www.earthsciweek.org/classroom-activities/chocolate-rock-cycle

This "chocolate cycle" is designed to mirror the rock cycle. The rock cycle is a continuing process and one type of rock can become another type of rock over time. In fact, most rocks will have undergone several changes in the rock cycle!

MORE RESOURCES ONLINE

1. The Geological Society has a webpage of resources on rocks and fossils, including info sheets, activities and lesson plans: https://www.geolsoc.org.uk/rocksfossils

2. The FAMOS project is on Twitter @FAMOS_ores. You can follow their progress and see photos of the project. The account also shares opportunities in geochemistry for interested students!

3. The Natural History Museum has a webpage dedicated to the FAMOS project, with information about the research team, project progress and more: https://www.nhm.ac.uk/our-science/our-work/sustainability/from-arc-magmas-to-ores.html