

Activity Sheet 7

Teams of STEM Professionals

Hellen is a senior scientist who works for Johnson Matthey in Billingham, Northeast of England. She uses special computer programs and powerful computers to make models, learn about how ingredients called catalysts work, and how to make better ones. These important ingredients are used to make lots of our everyday products, including fuel cells.

Hellen works with other scientists to improve or discover new catalysts that help the environment by making fuel and air cleaner. Hellen creates many models for these ingredients every week. Every few months, she finds a really good model and sends this to scientists who work with Emily to make real catalysts.

Emily is a membrane scientist and works in Swindon in the Southwest of England, about 260 miles from Hellen.

Emily works in a lab, where she tests Hellen's recipes together with new membranes to find out how well they work together in real life.

Emily tries a couple of new catalyst-membrane combinations every month. If Emily is lucky, she finds one combination from about every ten that Hellen sends her. Emily is then very excited about this, and sends the design that works to Dan.

Dan is a project manager and he works in Royston in the Southeast of England, about 120 miles from Emily. As a product manager, Dan is responsible for working out whether the combination of Emily's membrane and Hellen's catalyst recipe can be made in large quantities (thousands of kilogrammes a year!) and whether they have the right machines and equipment to combine the ingredients and make millions of fuel cell products.

Dan tries two new recipes a year and then other people in the team help decide whether they are going to make it, as they need to build a lot of new equipment which takes 2 - 3 years to do. Only two new products will be made every year.

**Catalysts are ingredients used in fuel cells and other things.
Catalysts are powders when first made.**

Membranes are special kinds of filters, that are thin, soft and flexible (bendy).

**Fuel cells are made up of many layers of catalyst and membrane.
The very fine catalyst powder is mixed with a liquid and looks like ink, so it can be spread over the membrane.**

Activity Sheet 8 STEM Team Map

