



Colour Chemistry Timeline

Time	Content	What's needed
5:30pm	Order pizza delivery/pick-up Set up of room: semi-circle of 6 tables around the demo table and 2 chairs at each table. Participant box and folder on each table. See plan for role play at end of document and set that up Separate table for serving food and drink.	<ul style="list-style-type: none"> Food box Role play box Activity boxes
5:45pm	Greet participants on arrival Pizza and water ready Get permission forms signed Start on demographic survey and pre-workshop (numbered) questionnaire	<ul style="list-style-type: none"> Pizza, cups, plates Forms, pens
6:00pm	Start formal introductions – round the room and volunteers briefly talk about their careers. What's your favourite colour and why? Introduction What is science? Engineering? What's the difference? What types of science are there? What is a scientist? What does a scientist do? Tonight we will talk about mixtures and how we separate them. What things can you think of that are mixtures? What happens when we mix colours? Do you know what colours make up others?	<ul style="list-style-type: none"> Coloured water (blue, red, yellow) One workshop box per group
6:20pm	Introduce PPE: glasses, gloves, coats. Why do we need PPE? Introduce pipettes, practise using them Activity Each group chooses 2 of the coloured waters and mixes them. They can try different ratios of each colour. Then they show the rest of the group what the result was from their mixture. Was this what was expected? Why are there different shades in everyone's containers? How can we separate these colours out again?	<ul style="list-style-type: none"> Glasses, gloves, shirts Pipettes Small plastic cups (3 each) Waste containers for coloured water
6:30pm	ACTIVITY – Thin Layer Chromatography 1. Cut the coffee filter into strips, about 1.5cm wide and at least 6cm long. Ensure the short edges are square. 2. Draw a pencil line across one short end, about 1-2cm above the edge. 3. Use the black felt pen to make a small dot in the centre of that line. 4. Add a small amount (~2mL) of water to the plastic cup. 5. Place the line-end of the filter paper into the water, ensuring that the dot does not sink below the surface of the water. 6. Hold the filter straight in the water for about 2min, and watch what happens.	<ul style="list-style-type: none"> Black felt pens Filter Scissors, pencil, ruler Water Rinsed plastic cups

6:40pm	<p>What's going on? How is the black ink moving? What colours do you see? What order do the colours appear in? Why? Where has the black dot gone? Does everyone's paper look the same? Let's do a role play to act out what's happening so we can understand it better. ROLE PLAY 1. The presenter is the water. No one can travel across the room faster than the water. The water moves up the room at a steady pace, with the 'ink colours' following. 2. The students are paper molecules (white leis), with 'grabby' hands (polar cellulose molecules). They have to stop the colour molecules as they try to move past. 3. The adults are the colour molecules. Each colour tie moves at a certain pace, related to its attraction to the paper. Those more attracted will shake hands and converse with the paper molecules. Those less attracted or not at all don't chat, or even shake hands, so that they can move faster across the room. 4. When the water stops moving, the colours stop moving too, and we can look and see how spread out they are, and if it looks like their filter papers.</p>	<p>Assign and explain each role to the whole group.</p> <ul style="list-style-type: none"> · Blue leis x 2 · White leis x 6 · Coloured ties, related to the colours obtained from the black felt pen.
6:55pm	<p>Discuss the activity with reference to the role-play. EXPERIMENTATION Each pair can decide what they want to do now, thinking about what variables to change and what to keep constant. NB: Only change one variable at a time. E.g. one colour in different solvents, or different colours in one solvent. They run more filter strips using different colour felts, and different solvents (maths, vinegar, IPA). Ensure groups record their variations, so they keep track of the results. It is important to label the cups or filter strips so they know which experiment is which! Create a table of results (colour vs. solvent) for the workshop on a whiteboard, so everyone can stick their filter papers in the relevant cells and compare them.</p> <ul style="list-style-type: none"> - Do you get the same results for one colour with different solvents? - Are there colours you didn't expect to see on the filter papers? - What other things did you notice when you experimented? - Why would you get different results for the same combination? <p>Discuss why a scientist would use this technique, what industries use the principle of separation of mixtures and how they do it. E.g. forensics (drugs, document ink), fuel contamination, food science (identify flavours and fragrances), etc. What else could you try this with at home?</p>	<ul style="list-style-type: none"> · Filter paper strips · Scissors, pencil, ruler · Different colour felt pens · Maths · Water · Vinegar · IPA · Magnetic buttons · Whiteboard
7:15pm	Post-workshop questionnaires, certificates presented, photos	
7:30pm	Participants can take home their chromatography and a spare filter, dropper and plastic cup	