Properties of stereoisomers – teacher notes

**Topic**
Stereochemistry

**Timing**
5 minutes

**Procedure**
In this experiment, students detect the differences in smell of each enantiomer absorbed on cotton wool inside small sample bottles.
To prepare these;
1. Place a small quantity of cotton wool into each bottle.
2. Add 10 drops of the stereoisomer.
3. The bottles can then be passed around the classroom.

![Chemical Structures](https://rsc.li/3V2f2pA)

\((R)\) - (++) - Limonene

\((S)\) - (-) - Limonene

**Apparatus**
- Plastic bottles x2
- Cotton wool

**Chemicals**
- \((R)-(++)\)-Limonene
- \((S)-(-)\)-Limonene

**Extension**
Students could obtain small quantities of \((R)-(++)\)-limonene in natural fruits by carrying out steam distillation of the peel of citrus fruits such as oranges and lemons and comparing the odours against the standards.
However, the \((S)-(-)\) isomer is scarce in citrus fruits: pine needles might be a good source, but the presence of other terpenes might make it hard to separate.
Health, safety and technical notes

- Read our standard health and safety notes here https://rsc.li/3fJh126
- Students must wear eye protection if carrying out steam distillation.
- Not needed for sniffing the stereoisomers.