Using membranes to separate crude oil

Slide by Neil Goalby. Available from rsc.li/4ypYnzx

Fractional distillation is used to separate hydrocarbons in crude oil. This process accounts for around 1% of the world's global energy use and has a high carbon footprint.

Scientists are developing membranes to separate crude oil. Membranes can separate molecules by size, shape and chemical affinity and not by boiling point. The membranes are porous polymer structures wound into rolls. These materials can work at an industrial scale and significantly reduce the energy demand when compared with distillation.



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Are membranes the way to sustainably separate crude oil?

Questions

1. Describe how fractional distillation separates crude oil.
2. Explain why fractional distillation has a high carbon footprint.
3. Suggest why using membranes could have a lower energy demand.