Magnetic catalysts

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Magnetic catalysts
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Why magnetic?

1. Separation
   Ease recycling of valuable noble metals

1. Magnetic heating

Localization of the heat where needed, a technology suited to push many catalytic reactions beyond the reactor heat transfer limits, to the limits of the process kinetics. Advantages: more favourable energy balance, process intensification, reactor setup, simplification, reduced safety issues, minor operational costs, increased process productivity and decentralisation.¹

¹W. Wang et.al. ACS Catalysis 2019, 9, 7921.
Magnetic catalysts

- Facile and scalable method for preparation of Ru based catalyst,
- Nanocomposite: magnetic nanoparticles dispersed within C material, decorated with Ru nanoparticles

Magnetic catalysts

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Hydrotreatment of eugenol

- Hydrogenation is nearly 5-times more favoured than the deoxygenation,
- Removal of the methoxy group from the HMPB is 28-times faster than that of the hydroxyl group from the HPB,
- Deoxygenation of saturated rings is an order of magnitude faster than that of the unsaturated products.

Magnetic catalysts

Magnetic heating

Conventional heating
Magnetic catalysts

- Active, selective and stable hydrogenation magnetic catalyst can be prepared by simple, scalable green methods,
- Magnetic heating shows advantages in faster heat-up and higher “effective” temperature leading to faster kinetics

Thank you for your attention

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