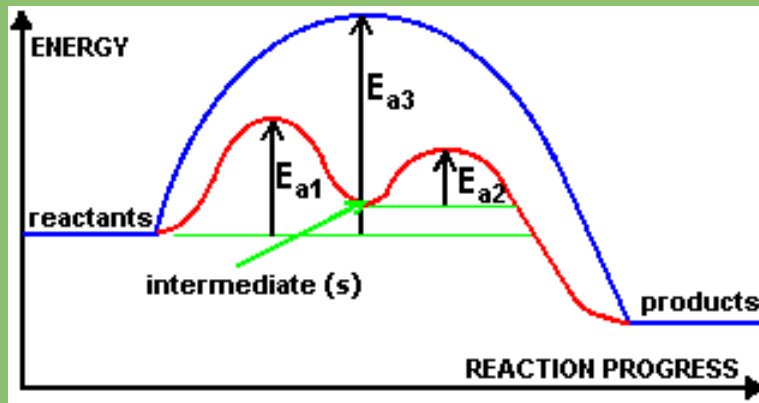


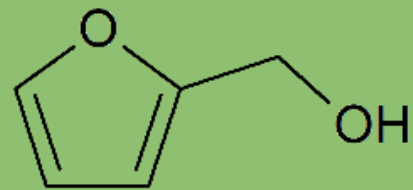
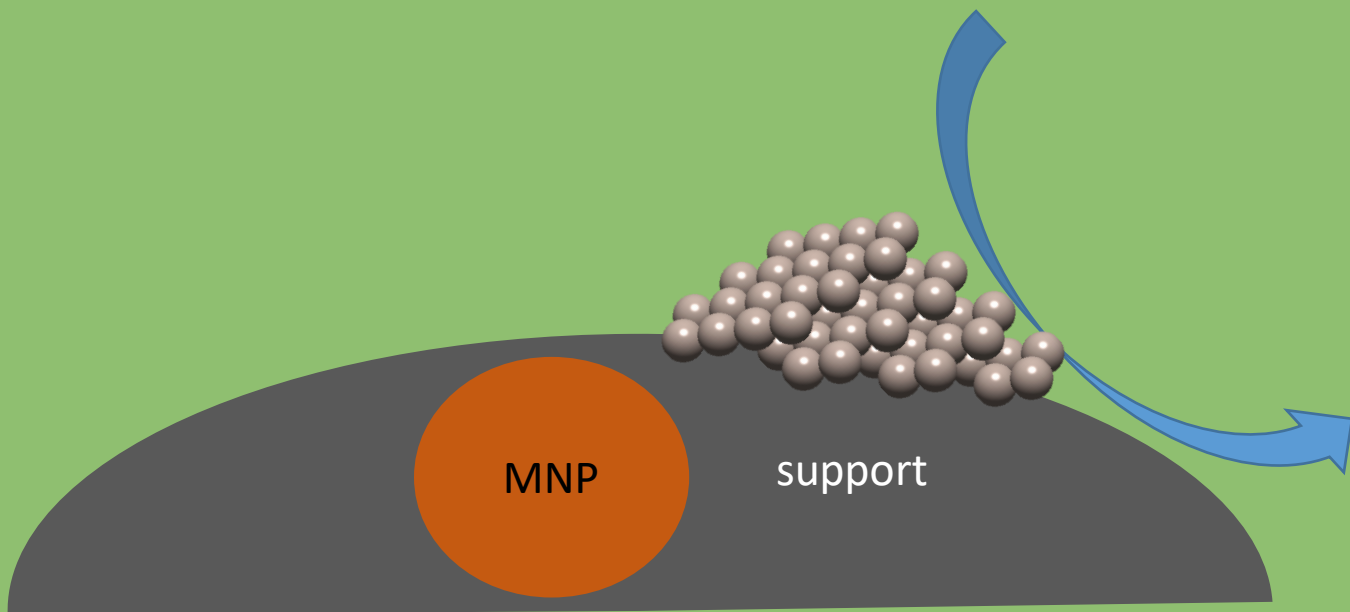
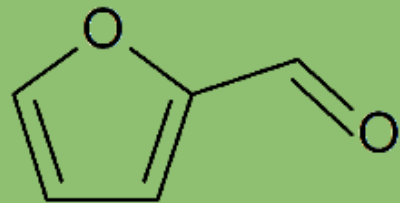
Magnetic catalysts

Sašo Gyergyek

Department for Materials Synthesis, "Jožef Stefan" Institute, Ljubljana, Slovenia



Magnetic catalysts

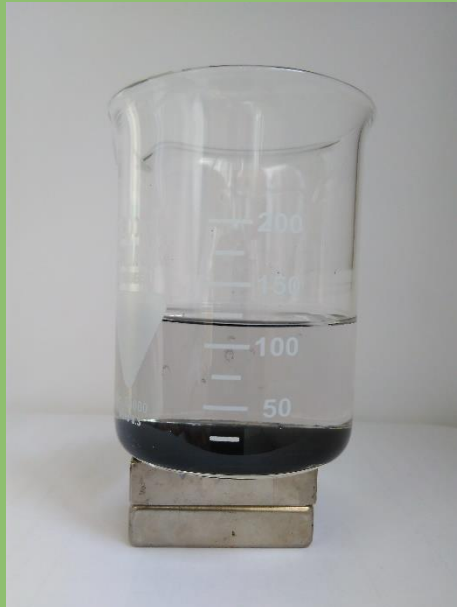


Magnetic catalysts

Why magnetic?

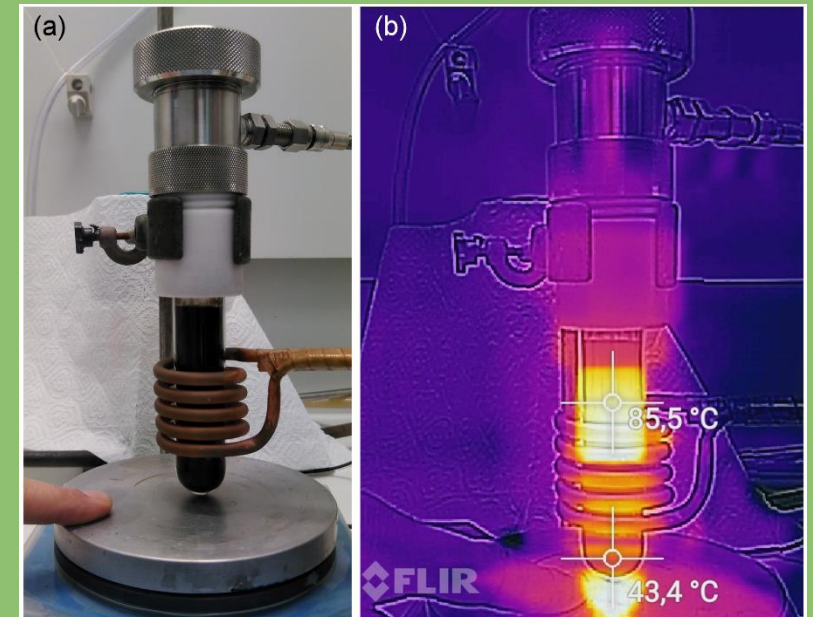
1. Separation

Ease recycling of valuable noble metals



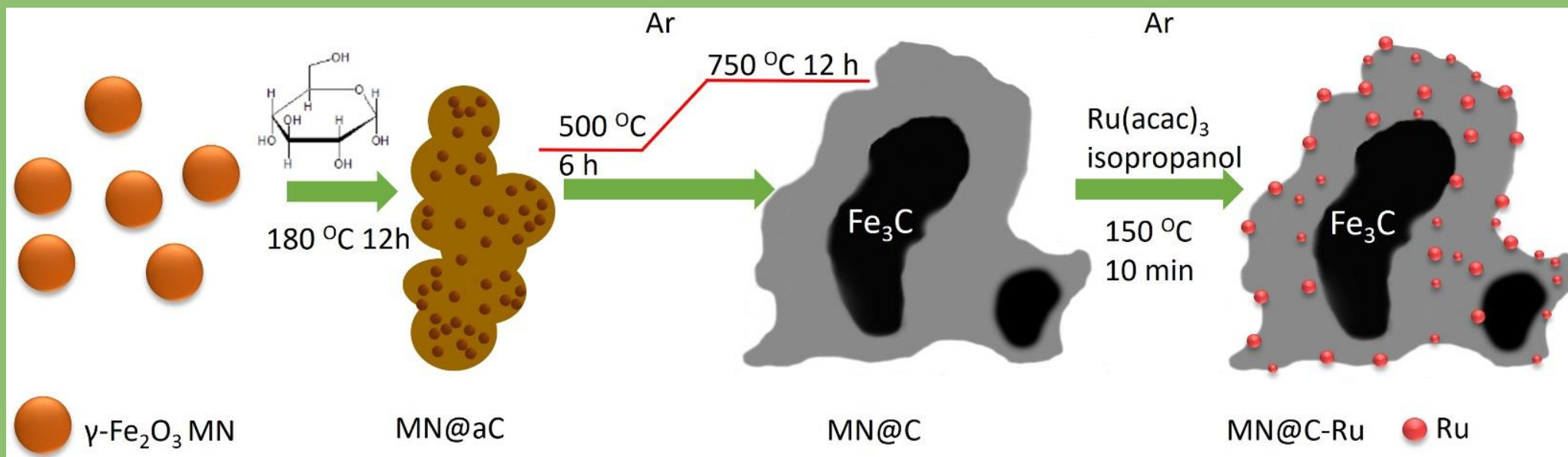
Localization of the heat where needed, a technology suited to push many catalytic reactions **beyond** the reactor heat transfer limits, to the limits of the process kinetics. Advantages: more favourable energy balance, process intensification, reactor setup, simplification, reduced safety issues, minor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

1. Magnetic heating

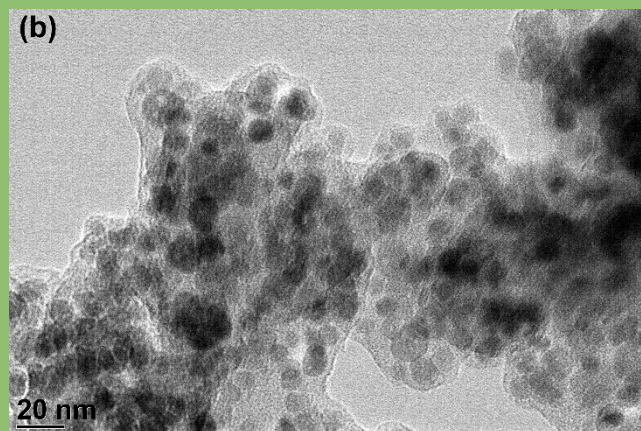
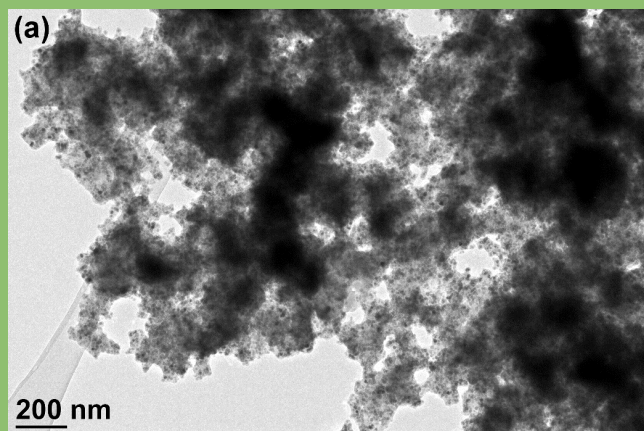


¹W. Wang et.al. *ACS Catalysis* 2019, 9, 7921.

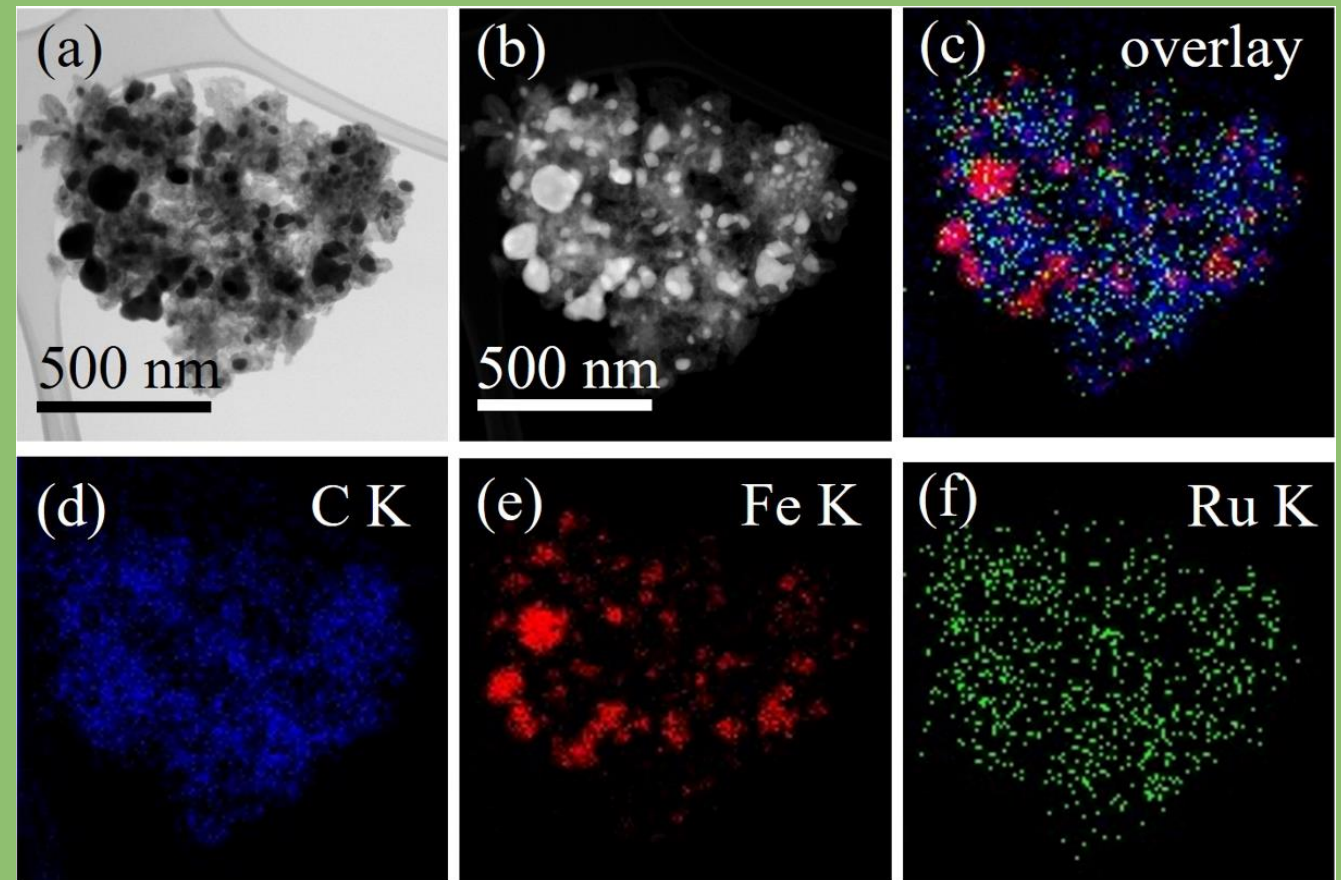
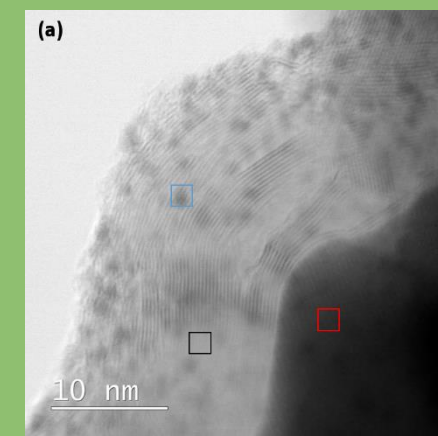
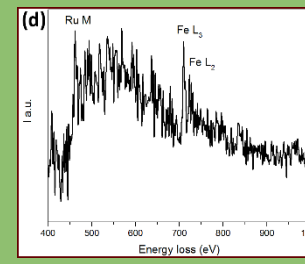
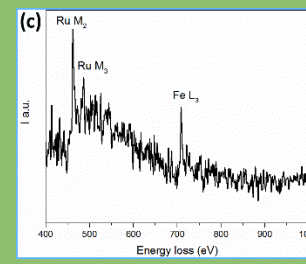
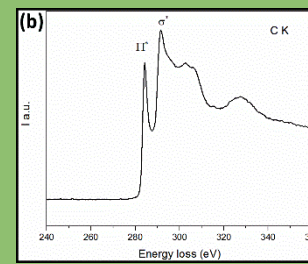
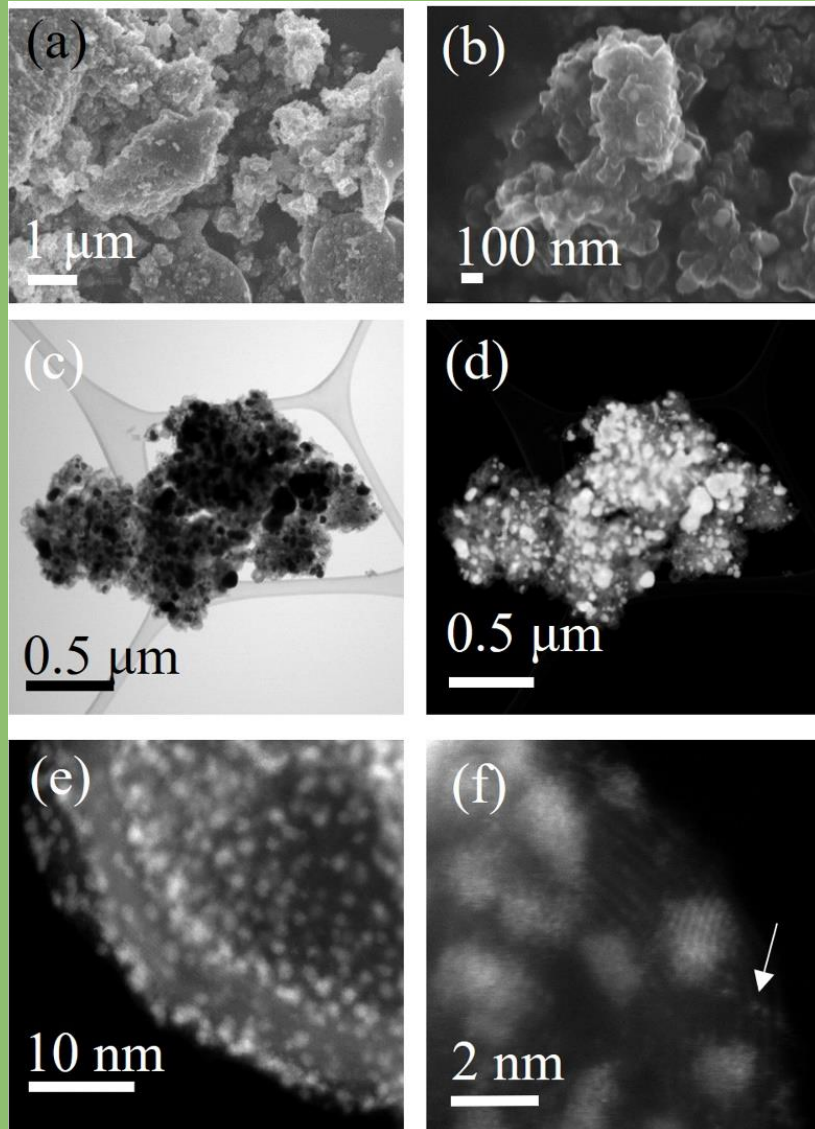
Magnetic catalysts



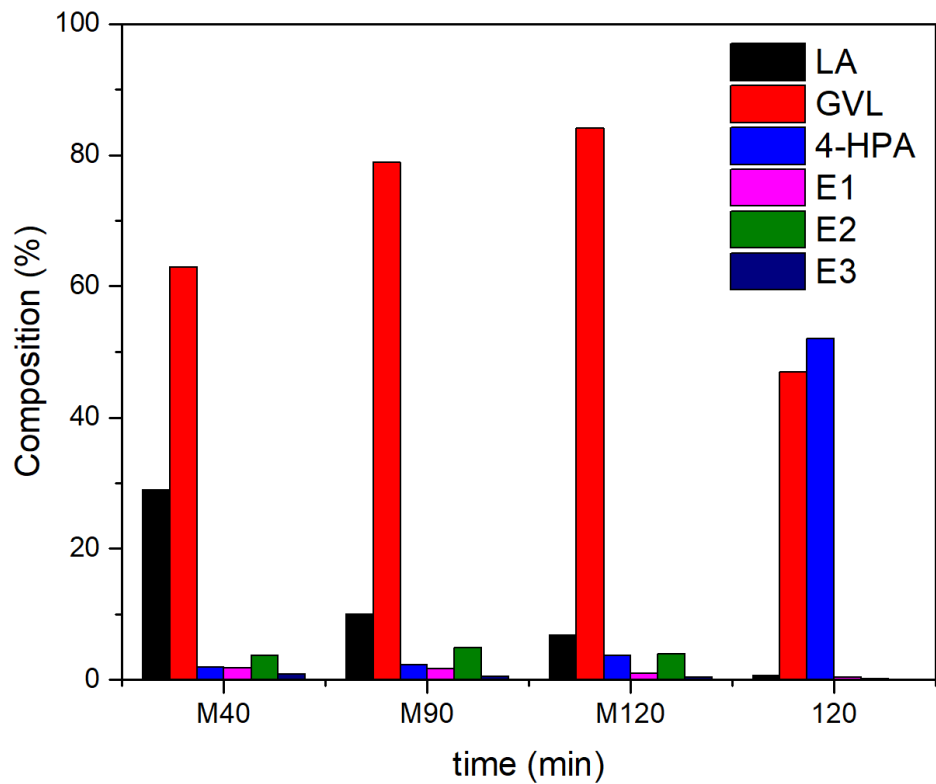
- Facile and scalable method for preparation of Ru based catalyst,
- Nanocomposite: magnetic nanoparticles dispersed within C material, decorated with Ru nanoparticles



Magnetic catalysts

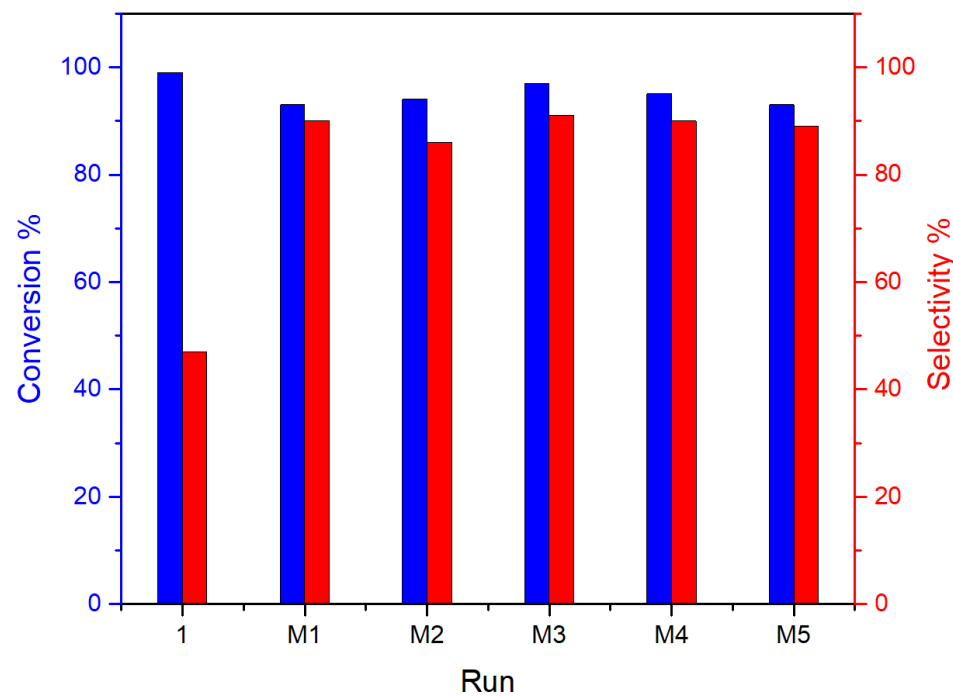
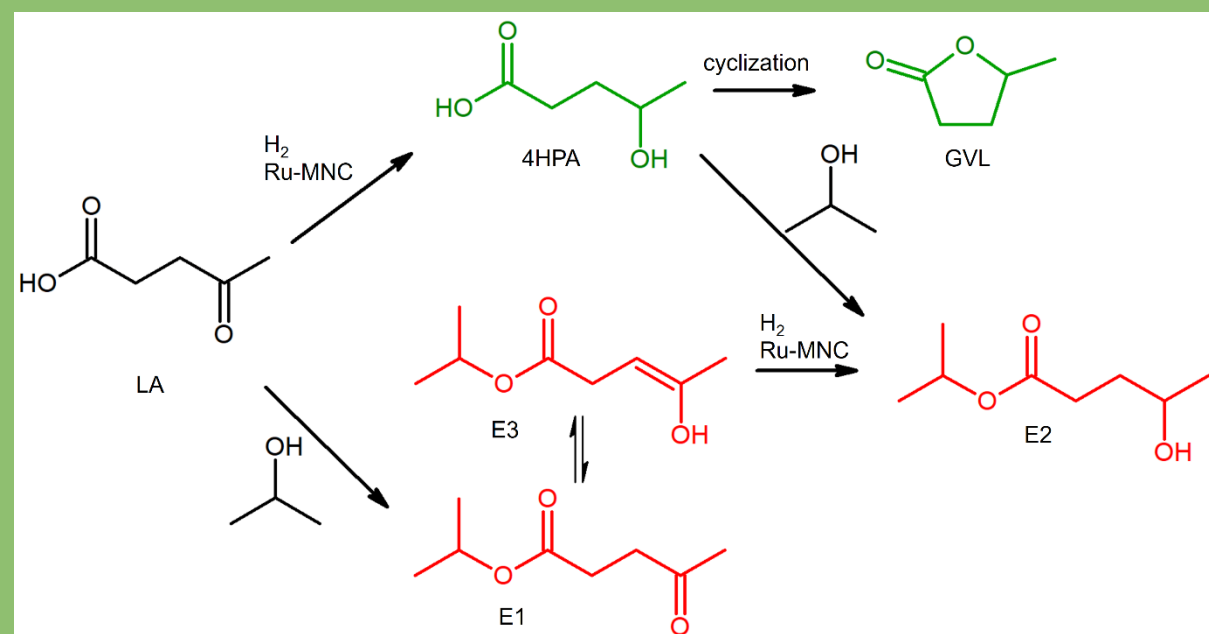


Magnetic catalysts



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

National institute of Chemistry:

- Blaž Likozar
- Miha Grilc
- Ana Bjelić
- Brigita Hočevar

Jožef Stefan Institute:

- Darko Makovec
- Andraž Kocjan
- Marijan Nečemer

Faculty of electrical engineering and computer sciences, University of Maribor:

- Miloš Beković



P2-0089
P2-0087
P2-0152

