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Catalyst preparation for fluidized bed reactors by spray drying

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Spray dried core-shell $\text{WO}_3/\text{TiO}_2$ catalyst

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Manufacture our own catalyst at laboratory scale <10 g
Micronization

before spray drying

Volume %

volume

0.1 1 10 100 1000
dp, μm
Spray drying

Micronization

- Binders:
  - LUDOX
  - PVA
  - H₃PO₄

- Temperature: 245°C
Spray dried core-shell $\text{WO}_3/\text{TiO}_2$ catalyst morphology and EDS elemental mapping: a) SEM image, b) Ti, c) Si, d) W
- **Binders:**
  - LUDOX
  - PVA
  - $\text{H}_3\text{PO}_4$

- **Temperature:** 180°C

![Diagram of spray drying and micronization process]

![Particle size distribution graph]

![SEM image of particles]
Spray dried core-shell $\text{WO}_3/\text{TiO}_2$ catalyst morphology and EDS elemental mapping: a) SEM image, b) Ti, c) Si, d) W
- Low T: particles agglomerate
- High T: spherical particles (too high - blow-holes)
- Binder: Ludox, PVA and H₃PO₄

Diagram:
- Spray drying
- Liquid bridge
- Catalyst particles: WO₃/TiO₂
- Binders: SiO₂, H₃PO₄, PVA
THANK YOU FOR YOUR ATTENTION