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- Fourier Transform Infrared Spectroscopy
- Fourier Transform Raman Spectroscopy
- $^{31}P$ MAS NMR Spectroscopy
- Electron Spin Resonance Spectroscopy
- X-ray Photoelectron Spectroscopy
- Powder X-ray Diffraction

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- Control experiment
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- Fourier Transform Raman Spectroscopy
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- X-ray Photoelectron Spectroscopy
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- Control experiment
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- Control experiment
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- Characterization Regenerated Catalyst
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- Catalytic Evaluation

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