



SOUTHWEST RESEARCH INSTITUTE



## Catalyst Formulation

To meet increasingly stringent emission regulations, Southwest Research Institute® (SwRI®) developed programs to focus on Catalyst Formulation. The technology of catalyst synthesis and washcoat preparation opens innovative options in balancing catalyst performance and cost. SwRI is equipped with the proper wet laboratory facilities to produce catalysts of various desired composition.

### Catalyst Synthesis

Single metal or mixed metal oxides can be synthesized and examined using x-ray powder diffraction for crystalline properties.

### Washcoat Preparation

Metals and metal oxides can be applied to the surface of catalyst substrates through application of a washcoat. The washcoat is formed through a process of milling and mixing with a high-shear mixer under controlled conditions.

### Dispersion

Catalysts are examined using scanning electron microscopy (SEM) and energy dispersive spectroscopy (EDS) to determine catalyst morphology and dispersion after application to the washcoat.



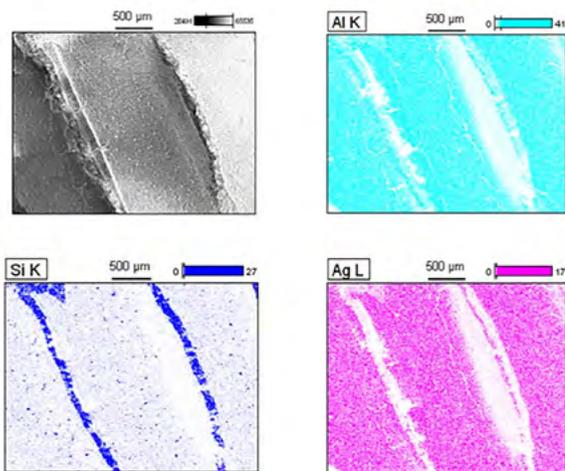
Synthesis of ru/metal oxide catalysts

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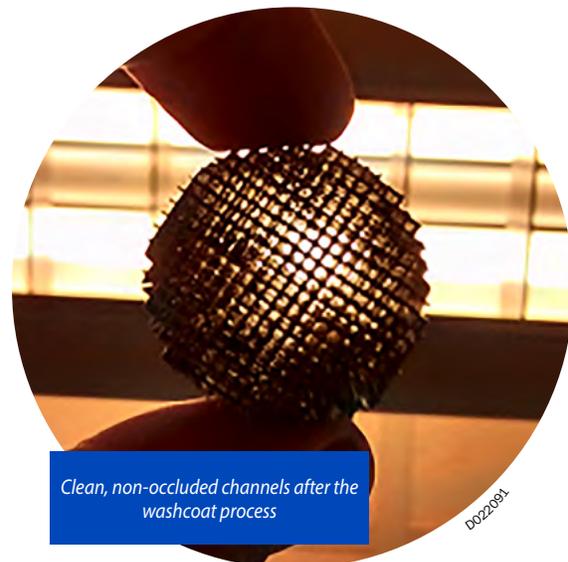


Bare cordierite substrate (left), substrate with SiO<sub>2</sub> washcoat (middle), substrate with Ru/SiO<sub>2</sub> washcoat

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Figures to the left show the dispersion of Ag and Al on a washcoated cordierite substrate.



Clean, non-occluded channels after the washcoat process

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SwRI's catalyst evaluation facilities



### ADVANCED COMBUSTION CATALYST AND AFTERTREATMENT TECHNOLOGIES

A Consortium of 



### CATALYST AND AFTERTREATMENT R&D

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