Promoted-Pt

Technology Differentiation
- Pt function is promoted using proprietary materials and methods; formulation can be tuned for specific applications.

How
- Rational Catalyst Design
  - Helps understanding the promoter effect better
  - Proprietary synthesis technology

Key Benefit:
- Lower Pt usage with comparable performance to industry's Pt-only based offerings

Target Applications:
- Well suited for low temperature oxidation applications normally requiring high Pt loadings.

Features and Supportive Data
- Low temperature CO oxidation activity (Fig. 1,2)
- If your application forces you to use Pt only, Nanostellar's Promoted Pt will improve CO/HC light off temperatures regardless of aging temperature (Fig. 1, 2)
- NO oxidation performance tuning (Fig. 3, 4)
- Engineering design around catalytic oxidation of NO to NO_2 (Fig 4)
- Enhanced overall performance stability compared to Pt-only technology (Fig. 2,4)
- Tolerance to sulfur poisoning

Manufacturing and Supply Flexibility
- Available on various alumina supports
- Can be custom-manufactured on your proprietary support material

Promoted Platinum Shows Superior CO Light-Off and Thermal Stability

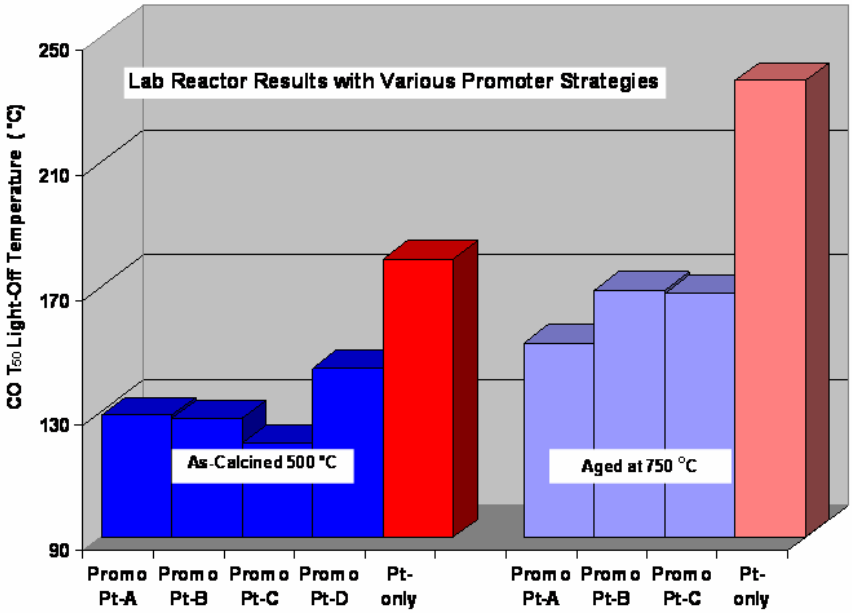

Fig 1. CO Light-Off temperature with various promoter strategies; Lab reactor testing; The catalysts were aged for 20 hours in 10% H_2O/Air at 750 °C.

Rational Design combines computational approaches with scientific experience and experimental methodologies in order to accelerate the development of new materials.

Nanostellar® specializes in Rational Catalyst Design with emphasis in the fields of quantum computational nanoscience, chemistry, materials science, and chemical engineering.

Nanostellar's unique combination of algorithms, software, synthesis processes, and testing methodologies enables the rapid development of novel heterogeneous catalysts, thus reducing R&D cost.

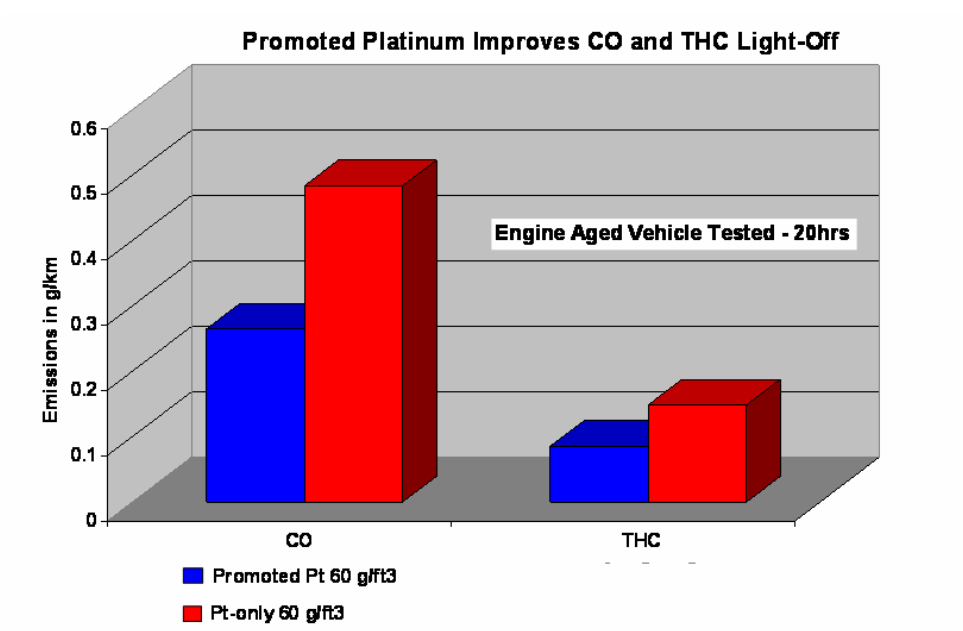

Fig 2. THC and CO bag emissions; Vehicle MVEG Test; The catalysts were engine aged for 20 hours using a two mode cycle with fuel injection used to reach maximum temperatures of ~ 650 °C. The catalysts did not contain HC absorption material.

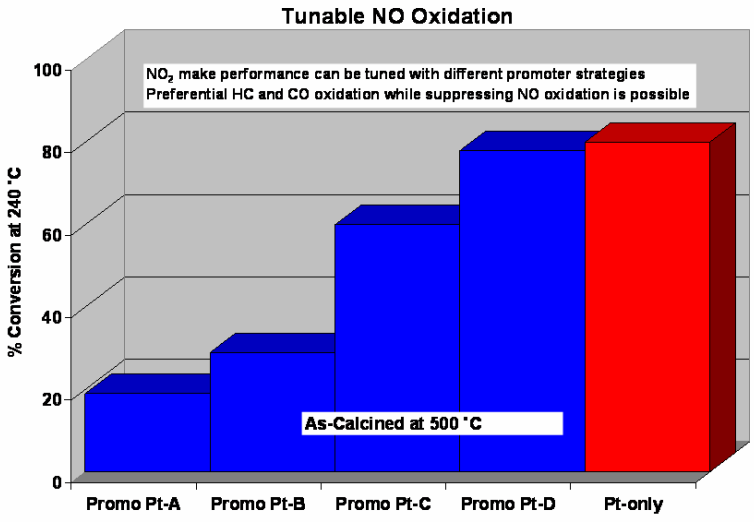

Fig 3. NO conversion at 240 °C; As-Calcined catalysts; Lab reactor testing.

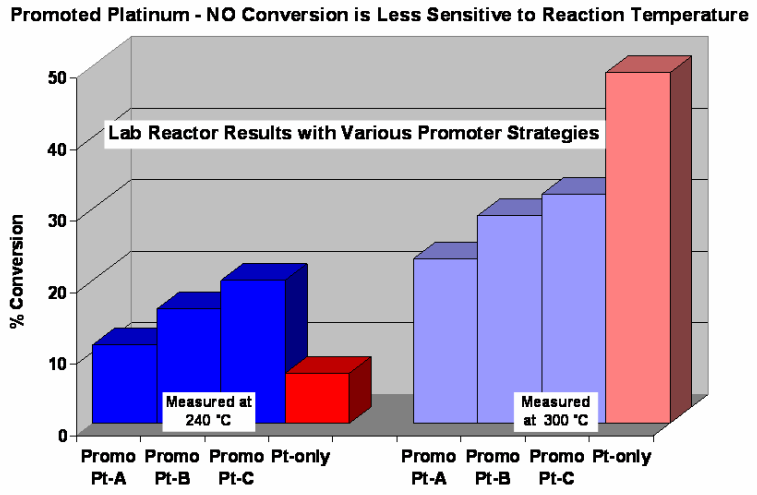

Fig 4. NO conversion at 240 and 300 °C. Lab reactor testing; The catalysts were aged for 20 hours in 10% H_2O/Air at 750 °C.

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