

## Comparison of NO<sub>x</sub> adsorption and desorption mechanism over Pd/CeO<sub>2</sub> and Pd/SSZ-13

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Passive NO<sub>x</sub> adsorber (PNA) is a practical solution to the NO<sub>x</sub> slip issue during the cold-start period. PNA adsorbs NO<sub>x</sub> at low temperatures and releases NO<sub>x</sub> at high temperatures where the other catalytic converts can fully function. Several materials, including metal oxides and zeolites, have been intensively studied as possible PNA materials. It is worth comparing different materials that can function in the same way to understand each material's pros and cons in the application. Here, we studied two representative PNA materials, Pd/CeO<sub>2</sub> and Pd/SSZ-13, how they adsorb and desorb NO<sub>x</sub>. Temperature-programmed desorption tests were carried out under different NO/NO<sub>2</sub> ratios. NO<sub>2</sub> and NO competitively adsorb over Pd/SSZ-13, while NO<sub>2</sub> promoted NO adsorption over Pd/CeO<sub>2</sub>. This phenomenon is attributed to the characteristics of their adsorption site. The effect of CO and sulfur treatments were also investigated over Pd/CeO<sub>2</sub> and Pd/SSZ-13.