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**FTIR and density functional study of NO interaction with reduced ceria:
Identification of N_3^- and NO^{2-} as new intermediates in NO conversion**

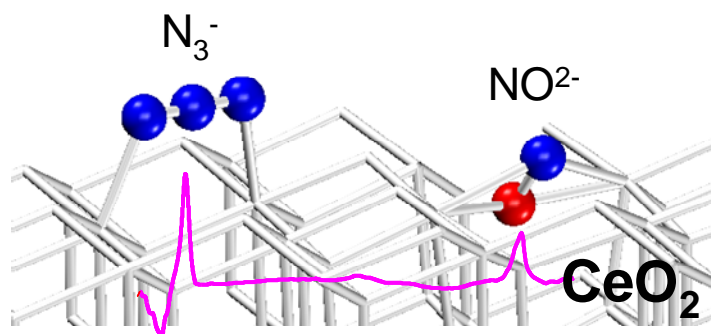
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Graphical abstract



Highlights

- NO produces N_3^- and NO^{2-} species when interacting with reduced ceria.
- N_3^- is inert towards NO or O_2 alone but easily interacts with a NO + O_2 mixtures.
- NO^{2-} interacts with NO forming surface hyponitrites further on decomposed to N_2O .
- The relative concentrations of N_3^- and NO^{2-} strongly depend on ceria morphology.

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