Nitrate in mineral dust:make more SO_2 become sulfate aerosols?

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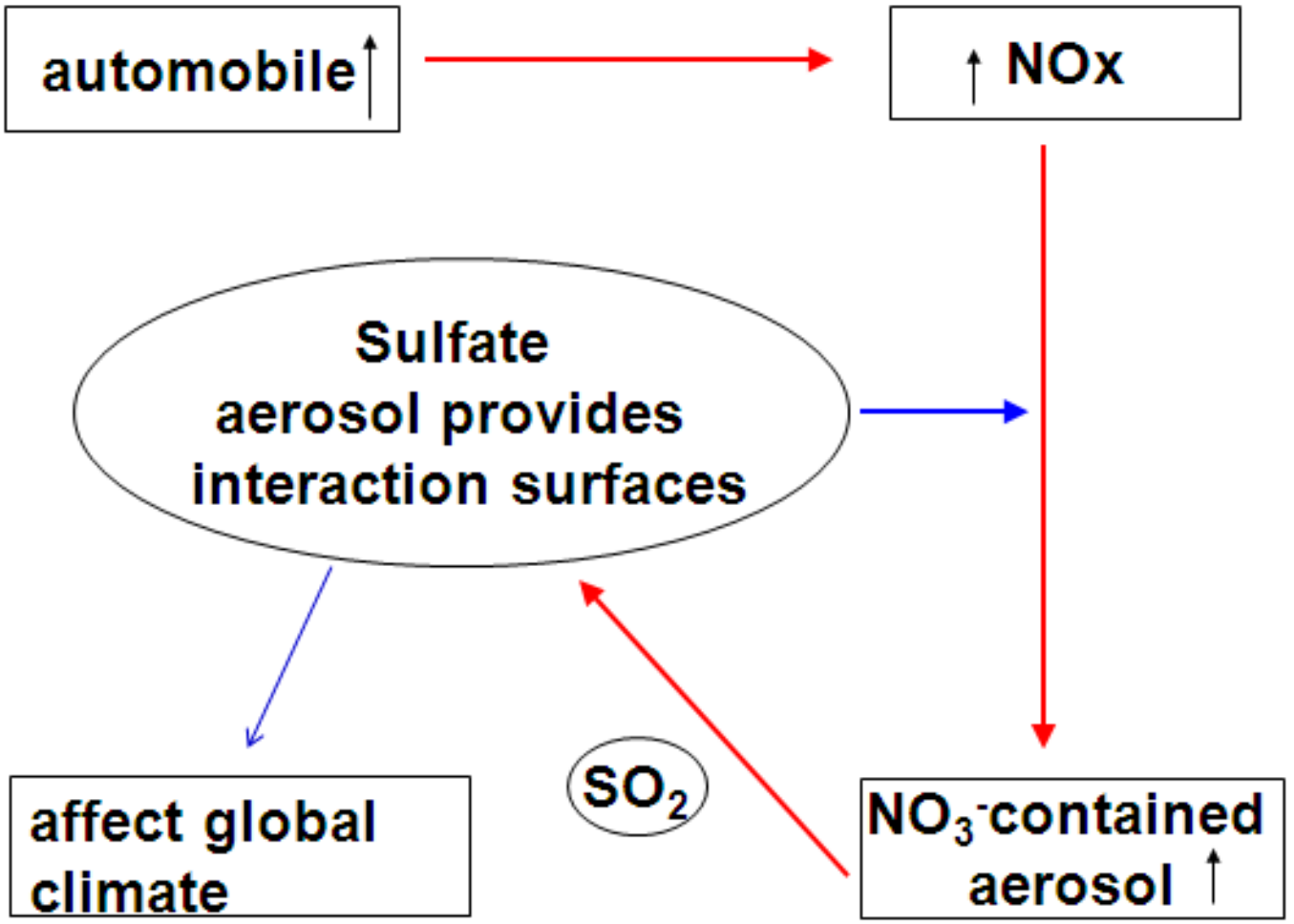
- **Introduction**
- **Experimental Conditions**
- **Results & Atmospheric Implication**

Introduction

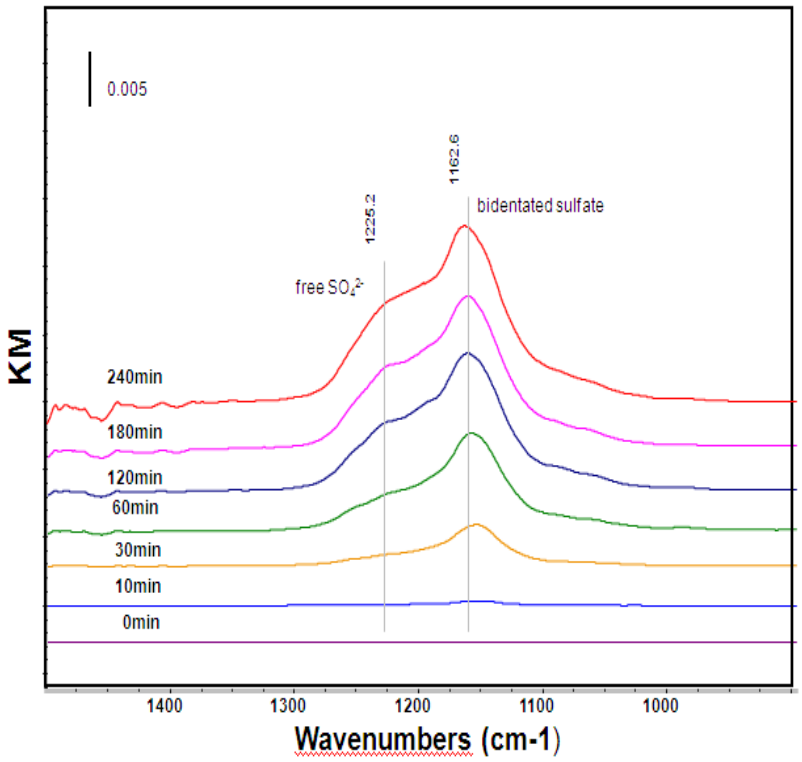


Experimental Conditions

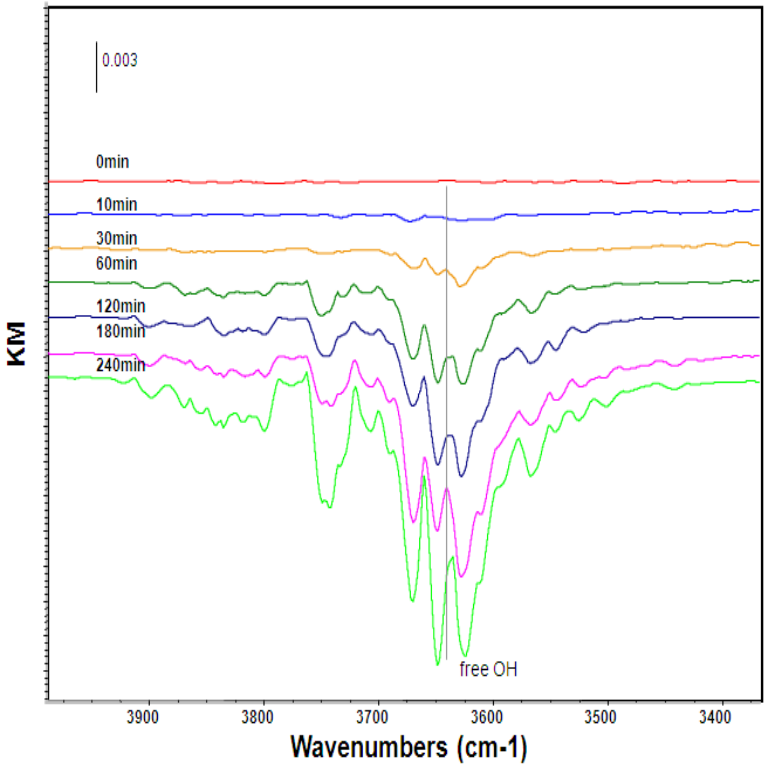
- SO_2 reacts with mixture of $NaNO_3$& different oxidation
- Fe_2O_3+different percent mass of $NaNO_3$ (0%,2%,4%,6%,12%,24%,48%,60%,72%,90%)
- Al_2O_3 MgO CaO SiO_2&Chinaloess with 24% $NaNO_3$
- Room temperature,SO_2 0.3_{PPM}

• Experimental Results

1) 4-hour infrared spectrum of SO_2 reacting with $NaNO_3$, α -Fe_2O_3 particles

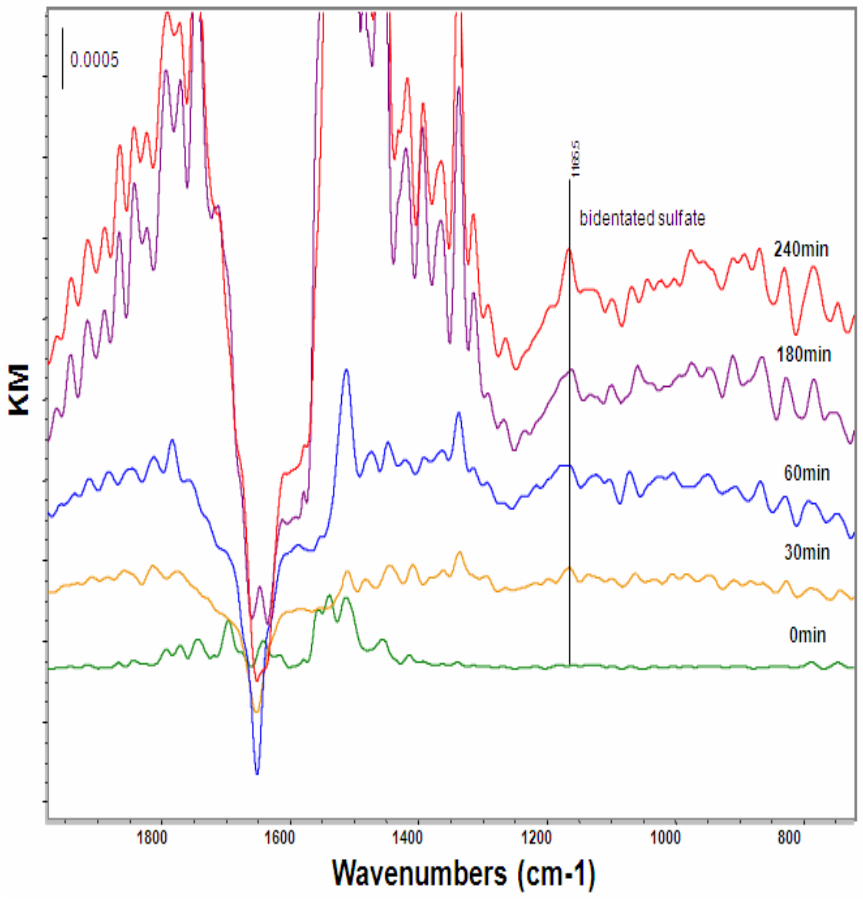


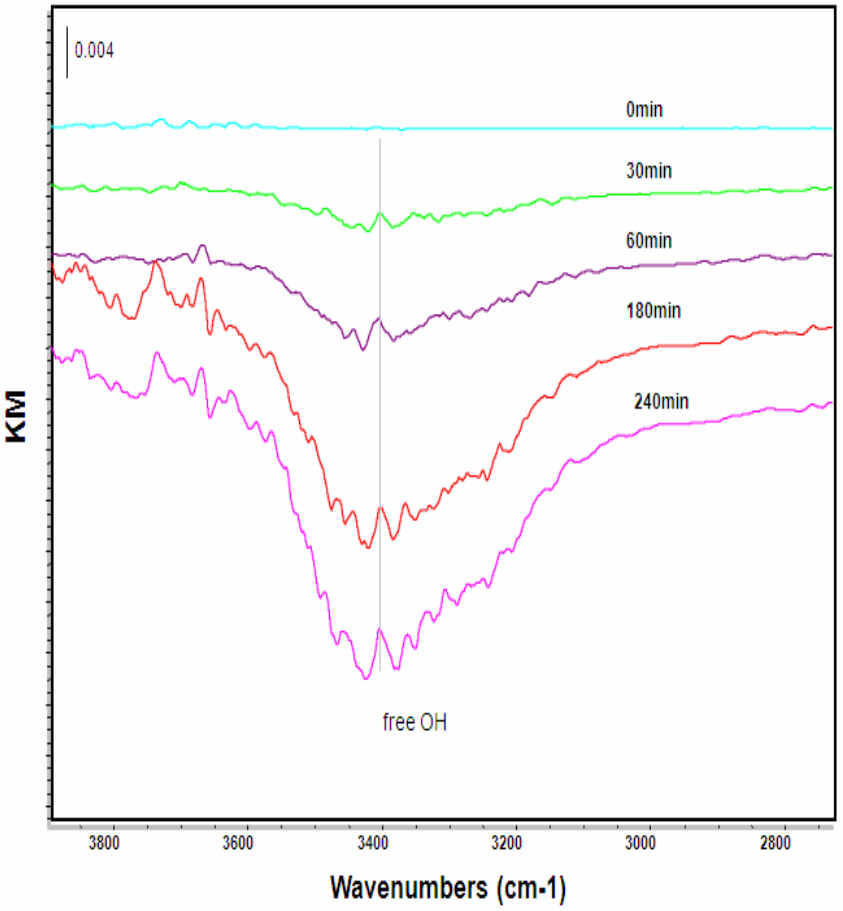
a.1000-1300cm-1 sulfate formation



b.3400-3900cm-1 decreasing OH

2) 4-hour infrared spectrum of SO_2 reacting with Chinaloesses

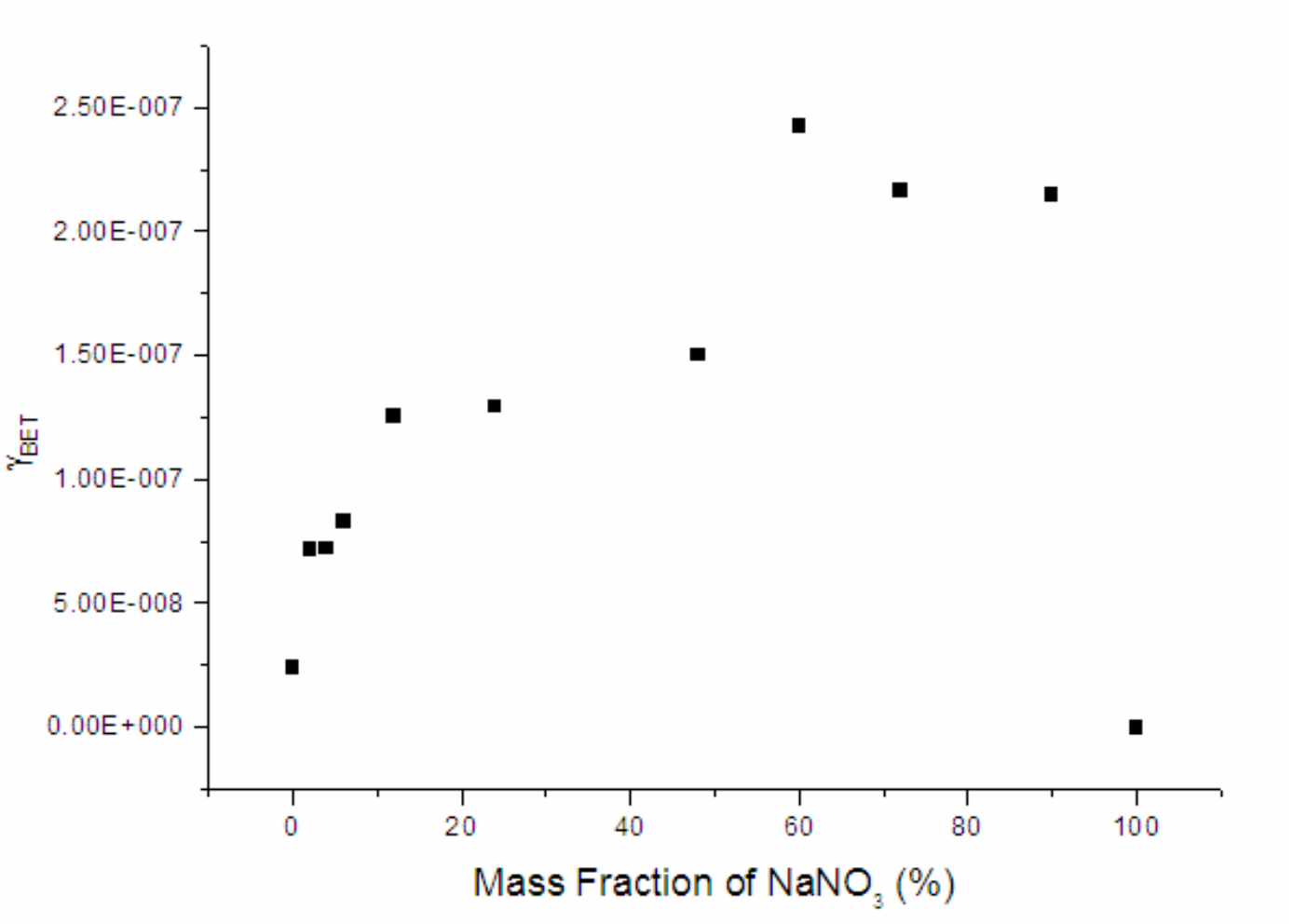




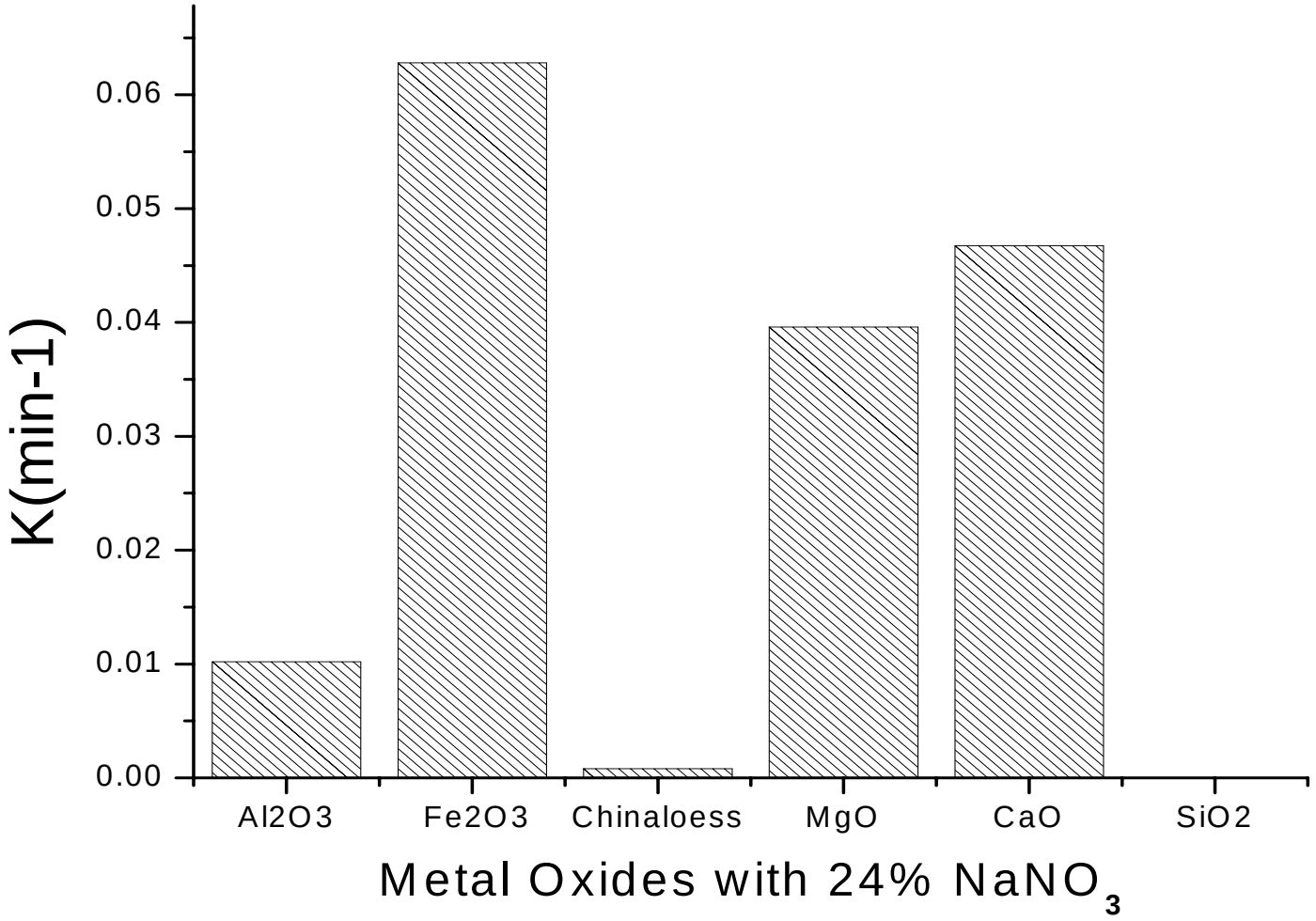
a.Sulfate formation

b.OH decreasing

3) BET uptake of different mass fraction of $NaNO_3$ along with α - Fe_2O_3 particles Reacting with SO_2



4) Velocity of 24％$NaNO_3$ along with different Oxides reacting with SO_2



Conclusion

- Sulfate formation on the $NaNO_3$-Metal oxides
- Using the BET area as the reactive surface area, the sample containing 60% of $NaNO_3$ (w/w) presented the highest γ BET value (2.42×10^{-7}), which increased by a factor of 10.2 compared to that of hematite
- the catalytic activity of hematite-$NaNO_3$ mixtures is much higher compared to other oxides-$NaNO_3$ mixures.

Thank you for your attention