

Supplementary Information For:

**Acid Rain Formation through Catalytic Transformation of
Sulfur Dioxide over Clay Dusts: Remarkable Promotion by
Vicinal Aluminium Site**

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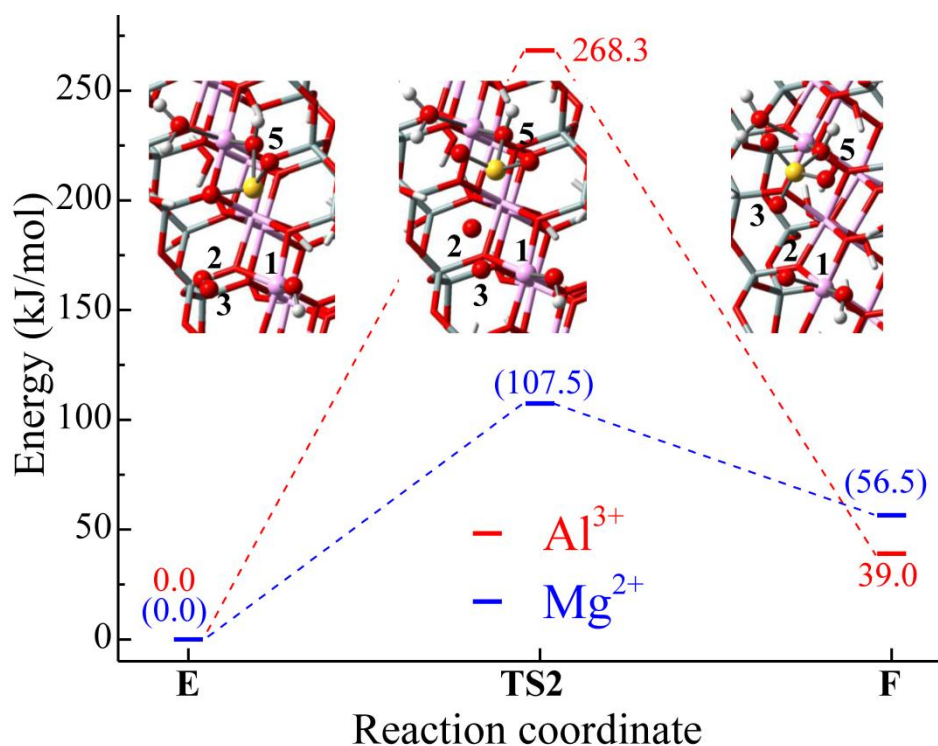


Figure S1. Potential energy diagrams for H₂SO₄ production through SO₂ reaction with O₂-adsorbed (010) edge of MMT (Path IV), where the reaction centers are Al³⁺ or Mg²⁺ site.

Local structures for reactions at Al³⁺ site are shown. Color scheme: Si (cyan), Al (pink), O (red), S (orange) and H (white).

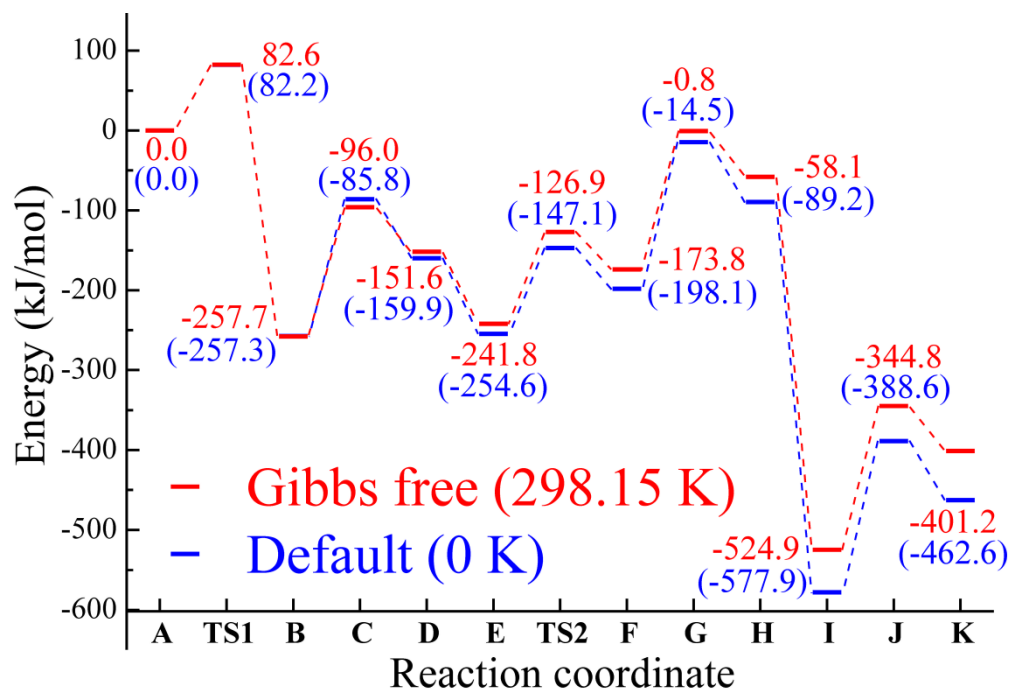


Figure S2. Profile of Gibbs free energy changes (298.15 K) for H_2SO_4 production through direct reaction of SO_2 and H_2O with O_3 at (010) edge of MMT (Path III). Corresponding profile of internal energy changes (0 K) is depicted for comparison, and related structures are shown in Figure 5.