## **Supporting Information**

## Decomposition of Potent Greenhouse Gas Sulfur Hexafluoride (SF<sub>6</sub>) by

## Kirschsteinite-dominant Stainless Steel Slag

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 $Fe_2O_3$  (C)

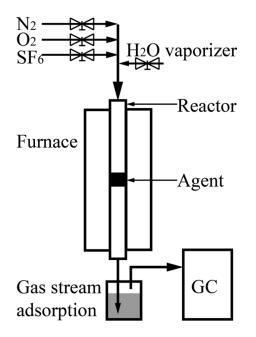


Figure S1 Schematic diagram of experimental setup

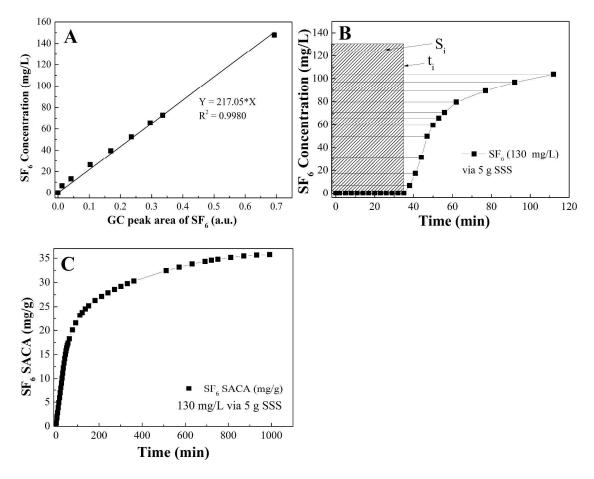


Figure S2. Data acquirement, treatment and presentation

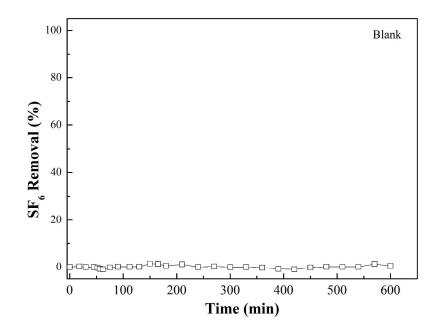
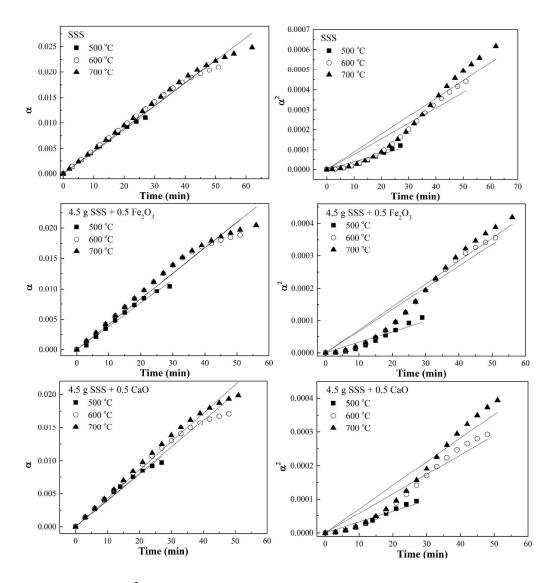


Figure S3. Blank test ran under no slag at 600  $^{\circ}$ C



**Figure S4**  $\alpha$  and  $\alpha^2$  fitted with time

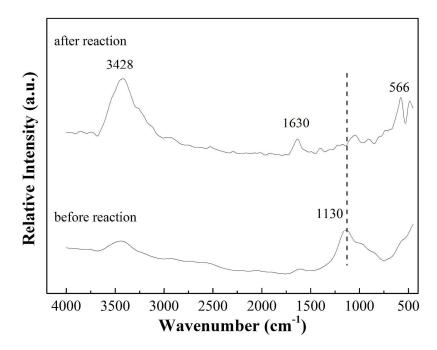


Figure S5 FTIR of slag before and after reaction

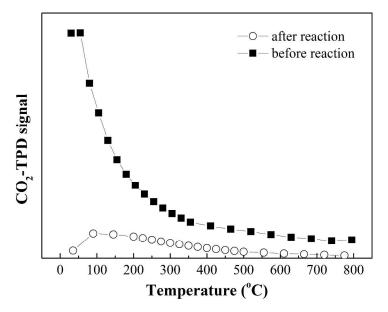


Figure S6 CO<sub>2</sub>-TPD of slag before and after reaction

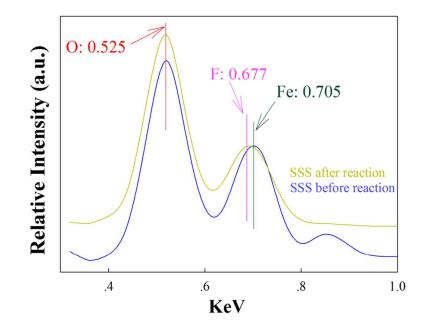


Figure S7 EDSs of SSS before and after reaction: partial comparison

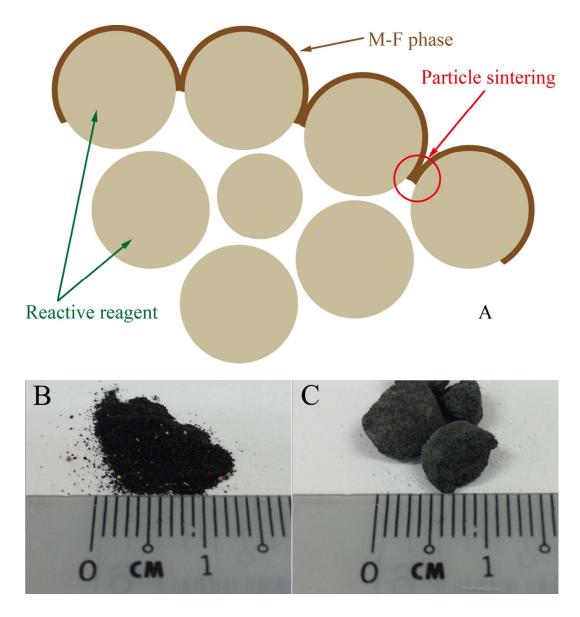


Figure S8 Scheme of sintering (A); reacted SSS powder (B); reacted SSS with 10 % Fe<sub>2</sub>O<sub>3</sub>

**(C)**