Desulfurization of Flue-Gasses

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Principal investigator

Igor Lubomirsky

Faculty of Chemistry
Department of Molecular Chemistry and Materials Science

Overview

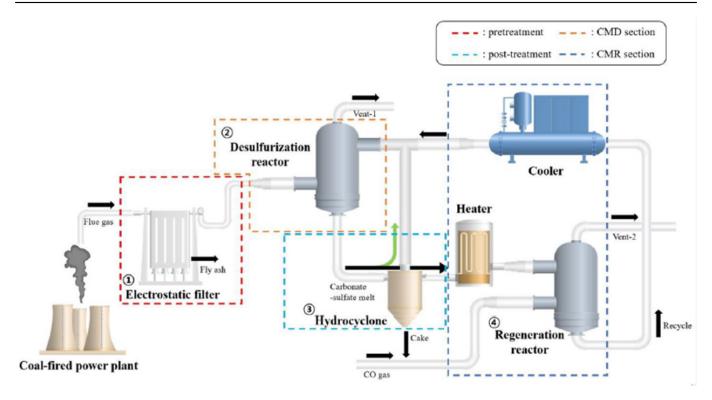
Current sulfur dioxide (SOâ'') removal technologies are outdated, costly, and environmentally hazardous. This novel system offers a high-efficiency, low-waste solution for purifying industrial flue gases by converting SOâ'' into reusable sulfur compounds. Operating via a carbonate eutectic melt at moderate temperatures, it enables selective recycling of SOâ'' without producing slurry waste, thus aligning with future environmental standards and creating potential for sulfur valorization.

Applications

- · Power plants (coal-fired)
- · Cement factories
- Metallurgical facilities
- · Industrial flue gas treatment systemsÂ

Differentiation

- High SOâ'' removal efficiency (residual SOâ'' in ppm range)
- No generation of hazardous slurry waste
- Operates at standard industrial temperatures (480–550°C)
- Compact system suitable for retrofitting (e.g., ~tens of m³ for 1GW plant)
- Enables revenue generation via production of sulfur/sulfuric acid



Development Stage

Proof-of-concept prototype validated in lab and successfully tested in a coal-burning power plant.

References

Juwon Lee et al, Comput. Chem. Eng. 2021 [1]

Nurlan Dosmukhamedov & Valery Kaplan, Int. J. of Coal Preparation and Utilization, 2022 [2]

Valery Kaplan et al, Int. J. Oil, Gas and Coal Technology, 2018 [3]

Patent Status

USA Granted: 8,852,540 USA Granted: 10,625,204