

STONE AND WEBSTER IONICS PROCESS

- Sulfur dioxide scrubbers. Stone and Webster Ionics Process. (Final report) (Comparison of several different types of scrubbers for use with this process), 1508 (PB-189377)
- STRETTFORD PROCESS**
[Removal of] sulfur from gas for less than 1 1/2 cent per million cubic feet (Stretford process consists of ashing sour gas with quinone solution, reaction of H₂S to form S and hydroquinone, oxidation of hydroquinone to quinone, and removal of S by filtration), 1246
Beavon sulphur removal process for purifying Claus plant tail gas (Catalytic hydrogenation of SO₂ to H₂S followed by oxidation to sulfur), 1642
Cleaning coke-oven gas by the Stretford process, 1325
High efficiency removal of H₂S from fuel gases and process gas streams (Description of Stretford process), 2034
Hydrogen sulfide removal [from coal gas] by the Stretford liquid purification process (H₂S absorbed by alkaline solutions of anthraquinonedisulfonic acids; dissolved O oxidizes H₂S to S; Na vanadate increases capacity of solution for H₂S and rate of production of S), 1258
Hydrogen sulfide removal by the Stretford liquid purification process (Use of aqueous alkaline solution of Na salts of anthraquinonedisulfonic acids to precipitate S; 18 references), 1236
Reducing sulfur content of effluent gas streams (Catalytic hydrogenation of effluent tail gas from 3-stage modified Claus process), 2117
- STRETTFORD PROCESS/ECONOMICS**
Stretford process (Sweetening of natural and industrial gases by complete removal of H sulfide and partial removal of organic S compounds), 1950
- STRONTIUM OXIDES/SORPTIVE PROPERTIES**
Reactivity of SO₂ with supported metal oxide: alumina sorbents (343°C), 2144
- SULFATES/PRECIPITATION**
Treatment of waste gas containing flammable sulfur compounds (Gas is burned and passed through metal halide solution to precipitate metal sulfite and sulfate), 2084
- SULFATES/PRODUCTION**
Present status of technical developments in desulfurization of waste gas (Development of 4 major desulfurization techniques: dry absorption, wet absorption, use of activated C, and contact oxidation), 1452
Recovery of sulphur in a marketable form from flue gases (Recovery of S by Fulham--Simon--Carves process in which flue gas reacts directly with ammonia liquor, and solution is processed to give ammonium sulfate and S), 1308
- SULFATES/REMOVAL**
Desulfurization of high-sulfur coals by hydroseparation (Modification of centrifugal separation of coal fines in heavy medium, slow-moving centrifugal thickeners; removal of 51.1% of sulfide S, 85.3% of sulfate S, and 19.4% of organic S), 1428
- SULFIDES/PRODUCTION**
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Desulfurization of high-sulfur coals by hydroseparation (Modification of centrifugal separation of coal fines in heavy medium, slow-moving centrifugal thickeners; removal of 51.1% of sulfide S, 85.3% of sulfate S, and 19.4% of organic S), 1428
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Reactions of organic sulfur compounds in town gas with mechanically activated α-ferric oxide. I. Ethyl mercaptan (Above 350° total S in ethanethiol is converted to FeS in solid phase and gas is freed from S), 1442
Removal of organic sulfur compounds from gas mixtures for synthesis. XII. Removal of ethyl mercaptan and ethyl sulfide from hydrogen, natural gas, and cracking gas (Ethyl mercaptan easily removable by Fe, Ni, Cu, Mn, Cr, Al, and Mg catalysts; diethyl sulfide removable by Cu and Ni catalysts), 686
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- Temperature control of exothermic reactions (Use of fluidized solid technique in reactor divided into 2 sections; use of process in manufacture of producer gas from coal or in roasting of sulfide ores), 3914
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- SULFITES/PRECIPITATION**
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- SULFUR/PRECIPITATION**
Hydrogen sulfide removal by the Stretford liquid purification process (Use of aqueous alkaline solution of Na salts of anthraquinonedisulfonic acids to precipitate S; 18 references), 1236
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- SULFUR/PRODUCTION**
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Claus process (Conversion of H sulfide to high purity S),

Cleanair process (Recovery of S from Claus plant tail gas), 1948

Coal gasification. Design of a coal-oil-gas refinery (Process for producing 100,000 bbl/day of light refinery liquid, pipeline gas, liquefied petroleum gas, solvent refined coal, S, and chemicals), 5383

Desulfurization of town gas and sulfur-recovery processes (Review), 568

H-coal- and H-coal-processes (Use of fluidized catalyst), 6889

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Natural gas processing plant (Separation of gaseous compounds and liquid condensate; production of fuel gas, stabilized condensate for gasoline blending, low pressure gas for industrial and domestic fuels, and elemental S; H₂S absorbed from gaseous streams with 20% aqueous monoethanolamine and oxidized to S), 1142

SO₂ converted to sulfur in stackgas cleanup route (Catalytic reduction using natural gases reducing agent; conversion efficiency is 90% or better), 1790

Stretford process (Sweetening of natural and industrial gases by complete removal of H sulfide and partial removal of organic S compounds), 1950

Sulfur production and gas purification (Scrubbing with K₂CO₃ solution, removal of H₂S by Fe₂O₃), 233

Takahex process (Removal of up to 99.9% of H sulfide from gas streams particularly those with low initial H sulfide concentration and/or high C dioxide/H sulfide ratios), 1951

Utilization of sulfur from gases formed in distillation of coal (Production of S and H₂SO₄ from H₂S from coal), 830

Wet purification for the removal of sulfur from gas (Oxidation of absorbed H₂S to S by alkaline solution of Fe₃(CN)₆), 320

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Application of the Stretford process to the removal of hydrogen sulfide at high pressure (Absorbent solution of Na anthraquinodisulfonate and Na carbonate; equipment), 1929

Cleanair process (Recovery of S from Claus plant tail gas), 1948

Coal gas purification in the Leopoldau gas works (Gas scrubbed with solution containing free ammonia, combined ammonia, thiosulfate, sulfate, thiocyanate, hydrogen sulfide, and hydroquinone), 1385

Coal gasification. Evaluating the bi-gas SNG process (Production of synthetic natural gas), 5328

Coal gasification for clean power production (Coal gasified in 2-stage fluidized bed process by using air and steam at 1400-2100°F and 10-200 atm; fuel gas desulfurized at 1400-1800°F using limestone or dolomite), 5409

Coal-oil-gas refinery offers SNG, refinery feed, low-sulfur fuel oil (Process design, operating variables, costs, product values, and economic feasibility of coal-conversion complex for production of high-Btu gas, liquid feedstock for petroleum refinery, and low-S fuel for power plants were examined), 5473

Combustion of high-sulfur coal in a fluidized bed reactor (Combustion takes place in reactor comprising gasification, combustion, and heat-recovery zones; fluidized bed of coal and limestone; effluent within CO; CaS produced), 5246

Desulfurizing fuel via metal oxides (Reaction rate studies relevant to desulfurization of coal or oil before complete combustion; S is converted to H₂S which is removed by reaction with metal oxide; S from metal sulfide can be recovered as SO₂ or S), 1488

Desulfurization method of gas containing hydrogen sulfide (Use of solution of Na carbonate and Na bicarbonate as absorbent), 1811

Gasifier and desulfurizer for carbonaceous materials (Co oxide and similar reactive oxides used for gasifying and desulfurizing carbonaceous materials with use of air as regenerative fluid; S gases converted to Co sulfides, and S then recovered and Co oxide regenerated), 5238

IFP process (Removal of H sulfide and S dioxide from Claus unit tail gas and stack clean-up to reduce amount of S dioxide), 7392

New processes. 5. Desulfurization of coal gas. Claus-type desulfurization (Japanese petroleum refinery plant), 1568

On desulfurization and removal of sulphur from smoke gases in Japan (Economics of S recovery; methods of desulfurization), 1441

On TEC/IFP sulfur oxide removal from stack gas process (Tokyo Engineering Co./Institut Francais du Petrol method for removing S oxides consists of cooling waste gas and absorbing S oxides with ammonium sulfate followed by recovery of S from ammonium sulfate solution; use of Claus process), 1923

Pilot plant for solvent refining of coal (Flowsheet for extraction of S from coal; coal dissolved in coal-based solvent at 1000 psi and 427° in presence of H; solution filtered and filtrate evaporated for recycling), 7351

Purification of fuel gases (Removal of S compound, such as CS₂, COS, thiols, thiophene, and H₂S, and by virtual elimination of CO), 1307

Purification of sulfur dioxide-containing waste gases with sulfur recovery (Use of solutions containing benzoic acid, nicotinic acid, or dibutyl hydrogen phosphate and their Na or K salts or urea or thiourea in water of organic solvents), 2138

Recovery of sulphur in a marketable form from flue gases (Recovery of S by Fulham-Simon-Carves process in which flue gas reacts directly with ammonia liquor, and solution is processed to give ammonium sulfate and S), 1308

Recovery of sulfur from coke oven gas. Critical review of methods (Dry and wet processes of S recovery from coke-oven gas with schematic flow diagrams), 1424

Recovery of sulfur from hydrogen sulfide-containing gases (Recovery from coal gas, oil gas, or producer gas in 5-step process; dilute Na₂CO₃ used as absorbent for H₂S; H₂S stripped from absorbent by Seaboard process; gas then scrubbed with solution of picric acid and Na₂CO₃ to oxidized H₂S to S), 1263

Recovery of sulfur from coke oven gas (Ammonia interfered in H sulfide recovery and in debenzeneization process; optimal S recovery obtained when pH was kept at 7.6-8.2 and when HCN elimination was reduced), 1386

Recovery of sulfur from gas streams containing hydrogen sulfide and sulfur dioxide (Treatment of stack gas with water), 2026

Regenerating alkaline solutions used for desulfurization of coke oven gas (H₂S is absorbed by alkaline solution containing catalyst), 2057

Removal of hydrogen sulfide from gases and sulfur recovery (Gas is first scrubbed with absorbent liquor (e.g., aqueous triethanolamine); residual H₂S is then removed by Fe or Mn oxide), 1306

Removal of hydrocyanic acid and organic sulfur compounds from coke-oven gas (Gas purified by scrubbing with solution containing As and hydroquinone or naphthoquinone), 2028

Removal of hydrogen sulfide from industrial or natural gases with recovery of elemental sulfur (S recovered from H₂S-containing gas with minimum amount of thiosulfate formation by absorption in H₂BO₃ solution containing oxidation catalyst; equipment), 1173

Removing SO₂ from stack gases (Review of full-scale and prototype processes with respect to stage of technological development, process design and operation, advantages, disadvantages, and economic feasibility), 7440

Shell Claus off-gas treating (Scot) process (Increase of S recovery efficiency from Claus units), 7391

SO₂ free two-stage coal combustion process (Coal S is not oxidized under reducing conditions existing during combustion), 1745 (PB-211888)

Solids from wet limestone scrubbing of power plant stack gases, 1922

Sulfreen process (Desulfurization of residue gas), 7390

Sulfur recovery in the manufacture of pipeline gas from coal (Overall S recoveries are 91 and 81% for low- and high-S coals, resp.), 5165

SULFUR/REDUCTION

New Shell process treats Claus off-gas (SCOT Process for removal of residual S present in off-gas of Claus-type S recovery units), 2078

SULFUR/REMOVAL

[Removal of] sulfur from gas for less than 1 1/2 cent per million cubic feet (Stretford process consists of astringing sour gas with quinone solution, reaction of H₂S to form S and hydroquinone, oxidation of hydroquinone to quinone, and removal of S by filtration), 1246

Actions, reactions, and side reactions of catalytic sulfur removal (Reduction of organic S to 2.8-5.9 grains/100 ft³ in a Holmes-Maxted plant using catalyst bed), 1074

Advanced coal gasification system for electric power generation. Annual technical report, August 9, 1972-June 30, 1973. Research and development report No. 81, interim report No. 1 (Development of economic, efficient, nonpolluting power plants), 5411 (NP-20074)

Advanced coal gasification system for electric power. Annual technical report for the period August 9, 1972-June 30, 1973. Research and development report No. 81, interim report No. 1 (Fluidized bed process using coal, air, and steam for gasification and limestone/dolomite for desulfurization), 5412 (NP-20128)

Air pollution and the coal industry (Desulfurization of fuels and flue gases), 1417

Attempted removal of sulfur from coal and coke (NONE), 1353

Basic methods of removing sulfur from coal (Review of methods; electrostatic, thermal treatment in absence of O to give H sulfide, leaching with acids or alkalines, and leaching in presence of ferrobacillus ferrooxidans; 34 references), 1500

Behavior of sulfur in the process of coal chlorination (Removal of S (particularly SO₄—) from coal by chlorination), 1145

- Behavior of sulfur compounds in coal during treatment with a solution of sodium in ammonia (Samples of coal treated at -35 to -40° under dry N; treatment reduced amount of S present as pyrite and as organic compounds), 1456
- Coal gas (Removal of S by bog Fe ore or a mixture of Fe_2O_3 and Na_2CO_3), 420
- Catalytic purification of gases (Removal of S by passage at 400 to 600° over a catalyst comprising Fe_2O_3 (60-80%) and ZnO (40-20%)), 560
- Catalytic effect of additions of organic and inorganic substances on the removal of sulfur in the coking of coal (Catalytic elimination of S in coking process by addition of inorganic compounds such as $MgCO_3$, CaO, Al_2O_3 , NH_4Cl , and $CuCl_2$), 1086
- Chemical desulfurization of coal. Report of bench-scale developments. 1 (Desulfurization of coal by Meyer's process in which pyritic S is oxidized as elemental S and as Fe sulfate; preliminary design and cost estimate for 100ton/hr desulfurization plant), 1887
- Chemical purification of gas and sulfur recovery progress and new applications (Review of methods of purification; discussion of dry and wet methods and advantages and disadvantages of each), 913
- City College studies of the Coalplex (Outline of work on reaction of coal with H; kinetics of C gasification; fast fluidized bed; agglomerating fluidized beds; S absorption kinetics; panel bed filter and flowsheet and system studies), 3112 (PB-229101/1)
- Coal. Black magic (Technologies of coal desulfurization, coal gasification, and sulfur dioxide emission control are described), 1765 (PB--213 032/6)
- Coal can yield low-sulfur fuel oil (Use of H-coal process to produce fuel oil and crude naphtha), 6933
- Coal conversion (Two-stage process; in first, finely divided coal is suspended in liquid coke-oven product (at 871°) in contact with H; in second, finely divided coal is liquefied at 427-516° under 141-703 atm; H is recycled), 7009
- Coal gas as a substitute for synthesis gas in the Fischer-Tropsch synthesis (Removal of O from coal gas by passage over Cu turnings at 320-500°; gas freed of S by passage over alkalized Fe_2O_3 at 250°; catalyst of 100 Co, 5 ThO_2 , 8 HgO, 80 kieselguhr), 6671
- Coal gasification (Review of coal gasification fundamentals including coal characteristics, coal processing, chemical reactions, and thermodynamics; low and high Btu gas production), 5481 (NP-20097)
- Coal preparation for synthetic liquid fuels, 6394
- COED [char-oil-energy-development] char desulfurization (S content of char reduced from 3 to less than 0.6% by reaction with H at 1600°F in presence of calcined dolomite), 1447
- Coke of low sulfur content from sulfur-rich coal (Coke desulfurized at 420-500° in presence of inert gas and water vapor), 1340
- Combustion of sulfur-containing coal (Gases purified by passing S-containing fuel and O under surface of both containing melted CaO and Fe; S reacts to form CaS that is removed and processed to give S or H sulfide), 7152
- Consumption of compressed air in an apparatus for removing sulfur in gases with a solution containing sodium carbonate and arsenic (Increase in As concentration increases stability of solution), 1684
- Control of alkalinity in dry-box purification (Effects on removal of HCN and S), 409
- Conversion of coal sulfur to volatile sulfur compounds during carbonization in streams of gases (Sulajr elimination with various gases at 1000°C), 334
- Desulfuration of the Jiu Valley coal by mechanical and magnetic methods (Coal contains 2.8-3.2% S, which is usually retained in coke made from it), 1389
- Desulfurization of gases and recovery of elementary sulfur, 1184
- Desulfurization of coal (Treatment with steam-oil at 350°C), 540
- Desulfurization of gas and processes for recovery of sulfur (Review), 599
- Desulfurization of solid fuels (Removal of S by mixing with acceptor solids such as metallic oxides; MnO is preferred), 1093
- Desulfurization. 4. Taking coal's sulfur out (Review with no references), 1683
- Desulfurization of waste gases and fuels (Literature survey including legislative measures, cost calculations, and processes), 1947
- Desulfurization of gas and processes for recovery of sulfur (Review of industrial processes for sulfur recovery), 572
- Desulfurizing and coking high-sulfur coal (Conversion of S to H sulfide, which is driven off), 1398
- Desulfurization during coking (By passing H, desulfurized coke-oven gas, or gaseous hydrocarbons through coke during coking, up to 54% of initial S can be removed), 1311
- Desulfurization in the gasification of coal (By condensing Fe carbonyl on the coal prior to gasification), 893
- Desulfurization of low-temperature carbonization char (At 1100 to 1700°F and >5 ata), 938
- Desulfurization of coke. III (Effectiveness of Al_2O_3 , H_2MoO_4 , Fe turnings, Cr_2O_3 , and aluminate solution for sulfur removal in coking operation), 1021
- Desulfurizing coke-oven gas by activated carbon (17 references), 4852
- Desulfurization of coal (Treatment of some coals with aqueous Fe^{3+} solution removes 40-75% of S content through nearly complete oxidation of pyritic S), 1677
- Desulfurization of carbureter gas (By passage over limestone or dolomite), 988
- Desulfurization of fuel oils (Costs), 1914
- Desulfurizing fuel (Description of apparatus and process), 2082
- Desulfurizing coal (At 300-500 psi and 300-350°), 942
- Desulfurization of coal during coking by the action of hydrogen (Coal sample heated in quartz tube in current of H while increasing temperature from 350-400° to 850° at rate of 5°/min), 1158
- Desulfurization of high-sulfur coals by hydroseparation (Modification of centrifugal separation of coal fines in heavy medium, slow-moving centrifugal thickeners; removal of 51.1% of sulfide S, 85.3% of sulfate S, and 19.4% of organic S), 1428
- Desulfurizing gases (Using mixture of Ni or Cu or their oxides, hydroxides, or carbonates dispersed in carrier), 565
- Desulfurization during coking process of coals (Carbonizing tests carried out at 400-1000° in presence of gaseous reagents (N, H, and C dioxide), active H sources (tetralin, isopropyl alcohol, cyclohexane), Fe compounds, and other desulfurizing agents), 1453
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- Desulfurization of unclassified coal fines by means of a combined gravity-flotation method (Flowsheet and numerous tables of data), 960
- Desulfurizing gases (By passing through bed of lava foam impregnated with Fe_2O_3), 592
- Desulfurization of coal (Mixture of equal volume of S-bearing coal and calcined limestone treated with H in fluidized bed at 600-800° and 1 atm; most pyrite S, ca 34% organic S, and some sulfate S removed), 1701
- Desulfurized fuel from coal by implant gasification (Two-stage, superpressure, O-blown coal gasifier for production of pipeline gas is described), 5268
- Desulfurization of industrial gas (Catalytic conversion of S to H_2S prior to removal; Pb oxide catalyst), 894
- Desulfurization of coal (By heating for 12 to 16 hrs at 350° under 610 mm in a current of air and steam), 513
- Desulfurization of gases (Removal of S using iron oxide on silica gel in rotating drum-shaped apparatus), 786
- Desulfurization of coke (Laboratory procedure), 950
- Desulfurization of coal-oil mixtures by attrition grinding with activated iron powder, 1420
- Desulfurize coal (Treatment of coal with caustic soda solution decreased S content from 4 to 1%), 1570
- Desulphurisation of fine coke charges in a current of hydrogen, 2121
- Developments in the complete removal of sulfur from coal-distillation gases. The autopurification process and the Staatsmijnen-Otto process (Economics), 721
- Dry purification of illuminating gas (Decreased efficiency of S removal with Fe_2O_3), 864
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- Effect of the heating rate on the desulfurization of coals during coking (Reduced coking rates at 300-400° and 400-600° contributed to desulfurization of coals), 1692
- Effect of molten caustic on pyritic sulfur in bituminous coal (Pyrite S converted to sulfides that are soluble in molten caustic and are completely removed), 1361
- Effect of coal gas on the removal of sulfur from Assan coal (Use of SiO_2 and Al_2O_3), 842
- Elimination of sulfur from coal by microbial action (Increase in oxidation of pyrites by *Ferrobacillus ferrooxidans*), 1227
- Elimination of sulfur during carbonization of coal, 404
- Elimination of sulfur from coal with molecular hydrogen, 1139
- Evaluation of beta radiation as a hydrogenation catalyst. Interim technical status report No. 3, September 1--December 31, 1962 (Hydrocracking of coal derivatives), 2980 (NYO-10186)
- Evaluation of SO_2 -control processes. Task No. 5 final report (Preliminary process designs and economic evaluations of 12 SO_2 -control processes), 1609 (PB-204711)
- Experiments on the removal of sulfur from coal and coke, 1380
- Extraction of sulfur from coke-oven gas and the manufacture of sulfuric acid (Removal of S by Collin NH_3 process; H_2SO_4 produced by Chemiebau wet contact process from recovered H_2S ; equipment), 1076
- Extraction and utilization of fuel-gas sulfur (Flowsheets and 20 references), 501
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- Flotation of pyrite from coal (Removal of pyrites from coal by 2-stage froth flotation), 2141
- Flotation of coals of high sulfur content (Effects of $\text{Cr}(\text{NO}_3)_3$, FeSO_4 , KMnO_4 , CuSO_4 , and Na_2SiO_3 on floatability in relation to removal of sulfur compounds and pyrite), 1071
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- Formation and present status of the Ruhrgas A.G. of Essen (Desulfurization of gas with bog Fe or Luxmass), 681
- Freeing gases from sulfur compounds (Sulfur absorption by compounds such as ferric hydroxides), 395
- Fuels with low sulfur content and smokeless fuels (Review; smoke and SO_2 emissions), 1502
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- Gas purification tower with continuous revivification (For removal of S from coke-oven gas), 829
- Gas purification and sulfur recovery by the Gastechnik process (Review of Gastechnik process), 1060
- Gas-purifying materials (Removal of S or HCN from coal gas or producer gas using porous nodules of Fe oxides and sawdust to which is added resin-containing agglomerant that forms gel in the mass), 480
- Gasification of carbonaceous solid fuels (CaO mixed with solid fuel or made into water slurry with it and allowed to react with O-containing gas to produce CO free of S ; CaO is regenerated), 4591
- Hydrocracking of low-temperature coal tars. 3. Hydrocracking of a neutral oil fraction (250-350°) (Use of catalysts containing Ni, Co, and Mo on molecular sieves and silica-alumina cracking catalyst), 6906
- Hydrogen sulfide removal [from coal gas] by the Stretford liquid purification process (H_2S absorbed by alkaline solutions of anthraquinonedisulfonic acids; dissolved O oxidizes H_2S to S ; Na vanadate increases capacity of solution for H_2S and rate of production of S), 1258
- Hydrogenation of CQED process coal-derived oils (Hydrogenation at 3000 psig over fixed bed of Ni--Mo catalyst; S removal), 6940
- Hydrogenation of coal (At >100 atm using catalyst which promotes hydrogenation and desulfurization; catalyzed hydrogenation of extracted oils at <280°C and >50 atm), 2643
- Improvement of the arsenic-soda purification process for removing sulfur (Concentration of As_2O_3 of 33.5 g/l recommended), 1368
- Influence of volatile constituents on desulfurization of coal during low-temperature gasification (Removal of S in coking coal is more difficult because of tendency to sinter), 1057
- Investigation of the chemical composition, properties and methods of treatment of primary tars of Cheliabinsk brown coal. II. Composition of the light-tar fraction and the stabilization of benzene by hydrogenation (At 400° and 100 atmospheres pressure using MoS_2 or CoS as catalyst), 2399
- Kinetic studies on the pyrolysis, desulfurization, and gasification of coals with emphasis on the non-isothermal kinetic method. Final report on phase 2, see also report dated Apr 1969, PB--185 882 (Research on sulfur control by means of coal gasification), 5132 (PB-211 338)
- Kinetics of the hydro-removal of sulfur, oxygen, and nitrogen from a low temperature coal tar (Batch hydrogenolysis of S , O , and N compounds in presence of W sulfide catalyst indicates that the hetero-atoms can be completely removed at 500° and 1500 psi; 13 references), 1431
- Laboratory research on metallurgical coke prepared by desulfurization of coke containing inorganic additives by the action of steam on calcium sulfide, 1274
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Sulfur dioxide emission control for industrial power plants (Efficiencies and economic feasibilities of dry additive injection system, wet scrubbing with lime, soda ash scrubbing, and caustic soda scrubbing with lime regeneration; pilot plant for lime regeneration system), 1543

SULFUR DIOXIDE/CORROSIVE EFFECTS

Reducing the sulfur content of coal (Organic S (40% of total) cannot be removed by physical means; remainder is pyrites; costs to be invested to remove S from solid fuel largely outweighs loss and injury to equipment due to S dioxide corrosion), 1452

SULFUR DIOXIDE/OXIDATION

Catalytic purification of waste gases of industrial plants to remove sulfur dioxide (Removal of S dioxide increases with increasing O concentration in gas and decreases with S dioxide concentration; V catalyst more efficient than Fe oxide), 1880

Cleaning stack gases (Removal of grit and dust as well as sulfur acids), 1582

Corona discharge oxidation of sulfur dioxide (S dioxide in humid air mixture), 1782

- Desulfurization of flue gases (Oxidation of S dioxide to S trioxide in presence of V oxide at 200 to 350°C followed by absorption by Li sulfate), 2131
- Development of desulfurization apparatus for flue gases - its history and outline (Use of dilute sulfuric acid as absorbent), 1632
- Kinetics of the catalytic oxidation and heterogeneous sulfation of sulfur dioxide at low concentration (Investigation of various mixed metal oxides for recovery of S dioxide from simulated flue gas), 1846
- Present status of technical developments in desulfurization of waste gas (Development of 4 major desulfurization techniques: dry absorption, wet absorption, use of activated C, and contact oxidation), 1462
- Removal of sulfur, vanadium, and alkalies from heating and combustion gases (Gases purified by reaction with basic compounds such as CaO or MgO at 600-800°C; catalysts such as Fe₂O₃ or V₂O₅ used to oxidize SO₂ to SO₃), 1303
- SULFUR DIOXIDE/PRODUCTION**
- Methods of hydrogen sulfide removal from coal gas with the aid of ammonia water (Indirect and semi-direct processes of ammonia recovery and production of SO₂ from H₂S are described in detail; 47 references), 1089
- Purifications of fuels (Removal of S from S-containing fuels using bed of CaO and/or Mg particles), 2143
- W-L SO₂ recovery process (Desulfurization of waste gas stream), 7327
- SULFUR DIOXIDE/RECOVERY**
- Continuous production of combustible gases (Combustible gases (fuel gas, synthesis gas, and H) produced by reformation or gasification of carbonaceous material), 4666
- Process for the recovery of sulfur dioxide (Recovery of S from waste gases containing S dioxide and S trioxide by scrubbing with aqueous solution of Na sulfite), 1695
- Recovering sulfur dioxide from gases (Aqueous solution of Na, Li, or K sulfite used to recover S dioxide), 2123
- Recovering sulfur dioxide from gases using aqueous salt solution of glutaric acid (Gases containing S dioxide are brought into contact with aqueous solution containing Na or amine salt of glutaric acid), 2135
- Removal and recovery of sulfur dioxide from high-temperature flue gas (Process for conversion of S dioxide to sulfuric acid; S dioxide absorbed in dilute sulfuric acid containing Mn sulfate as oxidation catalyst), 2080
- Removal and recovery of sulphur dioxide from power plant gases using magnesium based processes (Description in detail of Chemico Process and review of some other processes; desulfurization of stack gases is likely alternative to use of low-S fuels to reduce S dioxide emissions), 1630
- Removal of sulfur dioxide from gases (Review of methods with and without subsequent recovery of S dioxide; efficiency of methods), 1851
- SULFUR DIOXIDE/REDUCTION**
- Removing sulfur from hydrocarbons (Air pollution prevented by carrying out combustion in fluidized bed of CaO or MgO; S dioxide formed is converted to sulfates), 2116
- SO₂ converted to sulfur in stackgas cleanup route (Catalytic reduction using natural gases reducing agent; conversion efficiency is 90% or better), 1790
- SULFUR DIOXIDE/REMOVAL**
- Abatement of sulfur dioxide pollution by reduction with carbon monoxide (Chemistry of the process using an iron-alumina catalyst), 1674
- Absorbing sulfur dioxide from industrial waste gases (Presence of small amounts of Na, K, or ammonium hydroxides increases absorption of sulfur dioxide to 80-90% in comparison with 70-80% with zinc hydroxide), 1332
- Absorption of trace sulfur dioxide gas by sodium hydroxide solution (Treatment of nylon screen filter with NaOH solution), 1623
- Absorption of gases in wet cyclone scrubbers (Using water treated with soda ash), 492
- Absorption of sulphur dioxide from gases of low concentration (Absorbing medium is water in packed towers), 987
- Absorption of sulfur dioxide by molten carbonates (Method for desulfurization of flue gas), 2072
- Absorption of SO₂ by alkaline solutions in venturi scrubber systems (final report) (Differential equations calculated relating total pressure, liquid velocity, and S dioxide concentration in liquid along with axial direction and solved numerically for performance profile), 2004 (PB-224002/AS)
- Absorption of sulfur dioxide from gases (Equipment and technique), 996
- Activated carbon method of desulfurization technology of flue gas (S dioxide adsorbed by activated C that can then be regenerated), 1659
- Active carbon (Effectiveness for desulfurization of flue gases), 2016
- Adsorption of sulphur dioxide on coal (Possibilities for flue gas desulfurization), 1523
- Air pollution by sulphur dioxide (Methods for removal of SO₂ from flue gas), 1593
- Air pollution and the coal industry (Desulfurization of fuels and flue gases), 1417
- Air pollution control at the Northern States Power Company Sherburne County Generating Plant (Review of design, operation, economics, and emission controls of low-sulfur coal-fired electric generating plant; discussion of solid waste and effluent disposal methods), 1542
- Alternatives open to industry for controlling power plant pollution (Advantages of Chemico (magnesium oxide) scrubbing system), 1802
- Aluminas in air pollution control (Uses of aluminas in flue gas desulfurization), 1827
- Ammonia injection: route to clean stacks (Efficiency SO₂ removal from flue gas), 1622
- Ammonia method of trapping sulfur compounds from flue gases (Scrubbing of flue gases down to ultimate SO₂ content of 0.03% possible), 851
- Analysis of fixed bed sorption: flue gas desulfurization (Sorption on copper oxides), 2105
- Analysis of information obtained from the Japanese G.E.C.D. delegates and their associates regarding desulfurization of mineral oils and stack gases. (SIC) (Stack gas desulfurization by active manganese oxide or active carbon processes), 1464
- Apparatus for burning sulfur containing fuels (Reduction in amount of S oxides in gas emitted to atmosphere; combustion apparatus), 2058
- Apparatus for purifying gases (Removal of SO₂ and hydrocarbon impurities by adiabatic expansion), 1930
- Apparatus for removing sulfur dioxide from flue gas by oxidizing with ozone (SO₂ is oxidized with ozone to SO₃ then washed with water to form H₂SO₄ which is neutralized with calcium carbonate and collected as a by-product), 1514
- Apparatus for purification of industrial waste gases (Gas is scrubbed with lime water), 2125
- Apparatus for cleaning sulphur dioxide-containing flue gases (Circulating system containing calcium carbonate slurry), 1902
- Apparatus for removing sulfur dioxide from stack gases (Absorption on electrostatically charged water droplets followed by photochemical ionization (uv radiation)), 1756
- Applicability of commercially available catalysts for removing sulfur dioxide from flue gases (Commercially available vanadia and Pt catalyst are the only ones applicable to removal of S dioxide from flue gas), 2100
- Applicability of SO₂-control processes to power plants. Final report, 1797 (PB-213 421/1)
- Applicability of SO₂-control processes to power plants. (Final report) (Cost of installing SO₂ control equipment in existing plants), 1793 (PB-213421)
- Application to the Battersea Power Station of researches into the elimination of noxious constituents from flue gases, and the treatment of resulting effluents (Removal of SO₂ by water washing with iron oxide followed by lime solution), 7435
- Application of catalysts and ozone in the water purification of flue gases from sulfur dioxide (Solution of Mn salts used for absorption of SO₂ results in formation of H₂SO₄), 442
- Application of the Wellman-Lord SO₂ recovery process to stack gas desulfurization (Based on sodium sulfite/bisulfite cycle), 1870
- Application of SO₂ reduction in stack gas desulfurization systems (SO₂ is reduced to elemental sulfur), 1856
- Application of calcium-based wet flue gas desulfurization to a coal burning electric power plant (Operation of Chemico process plant), 1996
- Areas of technical uncertainty in some sulphur dioxide removal processes (Processes for removal of S dioxide from flue gases; economics), 1818
- Assessment of SO₂ control alternatives and implementation patterns for the electric utility industry. See also PB-207-08, 1936 (PB-224 119/8)
- Atomics international molten carbonate process for SO₂ removal from stack gases (Uses a molten eutectic mixture of lithium, sodium, and potassium carbonates to scrub the gas), 1842
- Beavon process (Purification of S plant tail gas to meet air pollution standards), 1949
- Beavon sulphur removal process for purifying Claus plant tail gas (Catalytic hydrogenation of SO₂ to H₂S followed by oxidation to sulfur), 1642
- Bibliography of sulfur dioxide removal and recovery from waste gases and sulfuric acid plant tail gases, excluding the limestone and dolomite injection processes, 1953-1968, with abstracts. (Part II) (223 references), 1515 (PB-190471)
- Bischoff process - initial results from a full-size experimental plant (Control of S dioxide emissions from power plants), 1552
- Boilers for urban heating, and flue gas desulfurization (Wellman-Lord process), 2106
- Cat-ox project at Illinois Power (Removal of SO₂ from flue gas), 1866
- Catalytic purification of waste gases of industrial

- plants to remove sulfur dioxide (Removal of S dioxide increases with increasing O concentration in gas and decreases with S dioxide concentration; V catalyst more efficient than Fe oxide), 1880
- Catalytic conversion of SO₂ to SO₃ by fly ash and the capture of SO₂ and SO₃ by CaO and MgO (Iron oxide in fly ash acts as catalyst), 197
- Catalytic purification of flue gases from sulfur dioxide (Use of MnO₂ alone and mixed with FeSO₄ as catalyst), 430
- Changing costs and economics of SO₂ removal systems, 2150
- Chemico-basic magnesium based SO₂ recovery scrubbing systems (For scrubbing flue gas), 1649
- Chiyoda thoroughbred 101 flue gas desulfurization process (Dilute sulfuric acid is absorption solvent for SO₂), 1814
- Clean fuel gas from coal by gasification (Removal of SO₂), 5286
- Cleaning of flue gases from watertube boilers fired by pulverized coal, 2032
- Cleaning up SO₂, 1975
- Coal. Black magic (Technologies of coal desulfurization, coal gasification, and sulfur dioxide emission control are described), 1765 (PB--213 032/6)
- Coal and sulfur dioxide pollution. Preprint (Methods for reducing SO₂ emissions), 1411
- Coal desulfurization (Coal treated in reducing atmosphere in fluid bed reactor to partially devolatilize it, remove all moisture and some H₂S and SO₂), 2043
- Coal gasification. Fluidized bed combustion system (Thermal efficiency in conversion to electric power of less than 50%, reduction in fuel consumption of 25%, and removal of SO₂ emissions from high-S coals can be obtained by coupling fluidized bed of crushed limestone or dolomite to K--steam gas turbine cycle), 5379
- Coefficients of mass transfer during absorption of SO₂ from gases by solutions of ammonium sulfite and bisulfite, 1354
- Combustion of coal in a bed of fluidized lime (Regenerative limestone process for fluidized bed coal combustion and desulfurization; potential for air pollution control is good), 1852
- Combustion efficiency, sulfur retention and heat transfer in pilot plant fluidized-bed combustors (Use of limestone to remove sulfur from flue gas), 1471
- Combustion smoke control technology (Comparison of wet and dry flue gas desulfurization systems), 1960
- Commercial experience with an SO₂ recovery process (Experiences with the Wellman--Lord process), 1746
- Commercialisation of lime/limestone flue gas scrubbing technology (For removal of SO₂), 2103
- Conceptual design and cost study. Sulfur dioxide removal from power plant stack gas. Magnesia scrubbing - regeneration: production of concentrated sulfuric acid, 1979 (PB-222509)
- Conceptualized fly-ash and sulfur dioxide scrubbing system with by-product recovery (Fly ash removal using a venturi scrubber; SO₂ removal by absorption by a slurry of magnesium oxide and magnesium sulfite), 1577 (PB-210354)
- Continuous process for scrubbing SO₂ from a gas stream with H₂ regeneration, 2060
- Continuous process for scrubbing SO₂ from a gas stream with CO regeneration and CO₂ stripping (Patent), 2142
- Contribution of the fuel research institute to the solution to the problem of sulphur oxide emissions from thermal power stations (Preparation of alkalized alumina absorbent with introduced metal for regeneraton purposes was successful with Ni or Co; reaction of S dioxide and carbonates of alkaline earth metals was studied), 1668
- Control of stack gas emissions from steam generators (Fuel desulfurization by hydrodesulfurization, water scrubbing of flue gas, limestone additive processes, wet absorption, and alkaline additive injection), 1631
- Control of sulfur emissions from combustion processes (Review with 110 references), 1540
- Control of particulate and SO₂ emissions from an industrial boiler plant (Tail-end limestone flue gas scrubbing offers greatest potential on annual operating cost basis), 196
- Control of fossil fuel power plant stack gas effluents (Desulfurization and purification), 1789
- Controlling sulfur oxide emissions (Discussion of various technologies), 1589
- Controlling sulfur dioxide emissions from coal burning by the use of additives. Paper 69-143 (Comparison of dolomite chips, hydrated lime, aragonite, red mud, and a liquid combustion catalyst), 1450
- Controlling SO₂ emissions from coal-burning boilers: status report, 1751
- Corona discharge oxidation of sulfur dioxide (S dioxide in humid air mixture), 1782
- Costs of scrubbing out SO₂ from flue gases, 1054
- Countermeasure for prevention of environmental contamination at a thermal power plant (Methods for removal of SO₂ from flue gas), 1938
- Critical evaluation of processes for the removal of SO₂ from power plant stack gas (Lime slurry scrubbing and Wellman--Lord process are almost ready for commercial application; other processes have problems or are not well enough developed), 1939
- Critical review of regulations for the control of sulfur oxide emissions, 1984
- Current status of sulfur dioxide control technology (Brief descriptions of 15 different processes), 1675
- Cyclic process for removal of SO₂ from flue gas (By reaction with sodium, potassium, or ammonium for mate), 1771
- Czechoslovakian proposal of ammoniacal flue gas desulfurizing for a 100 mw power plant (Scrubbing with ammonium sulfite-bisulfite solution), 1407
- Davy Powergas applies flue-gas desulphurization to power units (Wellman--Lord SO₂ recovery process), 2039
- Davy Powergas applies flue-gas desulfurization to power units (Cost estimates of Wellman--Lord SO₂ recovery process), 2044
- Design and installation of a prototype magnesia scrubbing installation (Scrubbing compound is magnesium sulfite), 1840
- Desulfurization of flue gas by calcium base wet process (Flue gas desulfurized in scrubber), 1550
- Desulfurization - Part 2. SO₂ removal still prototype (Discusses regenerative and nonregenerative alkaline processes), 1731
- Desulfurization of flue gases (Oxidation of S dioxide to S trioxide in presence of V oxide at 200 to 350° followed by absorption by Li sulfate), 2131
- Desulfurization of waste gas (Use of Mg hydroxide plus Mg sulfite slurry to absorb S dioxide), 2074
- Desulfurizing waste gases using activated carbon (Part of flue gas is washed with dilute H₂SO₄, obtained as wash water from the activated carbon adsorption towers of the main unit), 1703
- Desulfurization method using cyclic ketone (Involves absorption of SO₂ by sodium sulfite water solution then reaction of product with a cyclic ketone followed by heat cracking to regenerate reactants), 1808
- Desulfurization equipment for exhaust gas (Design of equipment used to collect SO₂ as H₂SO₄), 1969
- Desulfurization method of waste gas (Removal of SO₂ from flue gas by scrubbing with ammonia water), 1805
- Desulfurization of smoke by the electrically desorptionable active carbon method (II) (Smoke from burning of city gas), 1635
- Desulfurization of flue gas (By reaction with sodium, potassium, or ammonium formate in solution or in molten state), 1770
- Desulfurization of flue gases (Brief review of various wet and dry processes), 2085
- Desulfurization device using active carbon (For removal of SO₂ from flue gas), 2134
- Development trends of flue gas desulfurization (Review of processes with 26 references), 1723
- Development of desulfurization apparatus for flue gases - its history and outline (Use of dilute sulfuric acid as absorbent), 1658
- Development of Mg-gypsum method flue gas desulfurization plant (Use of MgSO₄ in absorption tower), 2054
- Development of the primary energy consumption and future means of refining and application of hard coal (Discussion of processes for treating hard coal), 5402
- Developments in Claus catalysts (Catalysts for desulfurization of stack gases), 1919
- Direct recovery of sulphur from stack gases with a fluidized activated carbon process, 1644
- Dispersed-phase additive tests for SO₂ control. Progress report on pilot plant investigation to evaluate the potential of direct limestone-dolomite additive for control of sulfur dioxide from combustion flue gas (Determination of reactivity of limestone and dolomite with S dioxide; dolomite more effective than limestone in general), 1416
- Dissolution of limestone in simulated slurries for the removal of sulphur dioxide from stack gases. Paper 7, 1849
- Dry binding of pollutants in flue gases (Absorption of SO₂ by ferric oxide), 2055
- Dry desulfurization of flue gas by adsorption (Flue gas moistened by spraying to facilitate absorption of S dioxide), 2118
- Dry lime method of removing sulfur dioxide from power station flue gases (Dry lime is added to the furnace charge), 1427
- Dry process for SO₂ removal due test (Use of a copper oxide absorbent for desulfurization of flue gas), 1754
- Dry removal process of sulfur compounds in exhaust stacks (Activated charcoal wetted with ammonium sulfate), 1476
- Economics of pressure gasification of coals with high ash and sulfur content (Economical coal utilization in electric power plants and city gas works could be achieved by pressure gasification; removal of SO₂ by washing with CH₃OH or KOH), 4817
- Effective utilization of alkali solution in wet process desulfurization for waste gases (Removal of SO₂ from flue gas using sodium hydroxide scrubber), 2030
- Elimination and recovery of sulfur from stack gas (Removal of SO₂ by adsorption), 1003
- Emission controls - status at coal burning power plants,

- Emission controls - status at coal burning power plants (Various methods for reduction of SO₂ emissions in stack gas), 1982
- Endurance test for a desulfurization system and the treatment of its waste liquid (Sodium hydroxide solution is used as absorbent), 1625
- Enriching producer gas (Removal of CO₂, H₂S, and SO₂ by physical and physicochemical means), 532
- Environmental protection and safety (Reinluft process for removal of SO₂ from power plant stack gas), 1778
- EPA alkali scrubbing test facility: sodium carbonate and limestone test results (final report) (Removal of SO₂ from flue gases), 2023 (PB-225041/3-AS)
- EPA alkali scrubbing test facility: sodium carbonate and limestone test results. Final rept (Initial results of testing prototype wet lime-limestone scrubbing facility for removing SO₂ particulates from flue gas), 2017 (PB--225 041/3)
- EPA overview of sodium-based double alkali processes. Part I. View of the process chemistry of identifiable and attractive schemes (Removal of SO₂ from flue gas), 1843
- Equipment for desulfurization of flue gas by wet calcium method, 1759
- Evaluation of the chemical thermodynamics in the report, 'applicability of metal oxides to the development of new processes for removing SO₂ from flue gases.' (By Tracor Corporation and submitted to the National Air Pollution Control Administration), 1475 (DRNL-TM-2744)
- Evaluation of solid mineral wastes or removal of sulfur from flue gases (Possibility of using red mud (from bauxite refining) or a lead-zinc ore tailings for removal of SO₂ from flue gases), 1629
- Evaluation of the fluidized bed combustion process. Volume I. Summary report. Report for 15 Nov 1969--15 Nov 1971 (Reduction of SO₂ and nitrogen oxide contents of flue gases by fluidized bed coal gasification process), 8243 (PB--211 494)
- Evaluation of SO₂-control processes: task No. 5 final report (Technical and economic evaluations of feasibility of 12 different processes for control of S dioxide), 1698 (PB-204711)
- Evaluation of solid mineral wastes for removal of sulfur from flue gases (Use of red mud or lead-zinc ore tailings as absorbents), 1646
- Evaluation of the fluidized bed combustion process. Volume II, technical evaluation, see also Volume 1, PB--211 494 (Removal of SO₂ from flue gases by limestone scrubbing), 1612 (PB--212 960/9)
- Examination of simultaneous removal of sulfur dioxide and nitrogen oxides in stack gases by ammonia (Use of activated manganese for desulfurization), 1993
- Exhaust gas desulfurization. Status of work and results at STEAG (Review of control methods implemented at power plant to reduce S dioxide emissions in stack gases), 7439
- Experimental SO₂ removal system and waste disposal pond, Widows Creek Steam Plant, Alabama. Final environmental impact statement. Supersedes report dated 3 Jul 1972, EIS-AL--72-4819-D (Removal of SO₂ and fly ash from flue gases), 1905 (EIS-AL--73-0101)
- Fabric filter: another option for flue gas cleanup (Effectiveness of baghouse system for particulate and SO₂ control), 1898
- Factors affecting emission of odorous reduced sulfur compounds from miscellaneous kraft process sources (Use of lined water, dolomite, or activated carbon to remove SO₂ from flue gases at coal-fired power plants), 1707
- Final environmental statement, Navajo Project (Removal of SO₂, nitrogen oxides, and fly ash from flue gas at Navajo Generating Station), 1700 (PB-203228-F)
- Flue gas desulfurization using surface impregnated sorbent (Patent), 2148
- Flue gas desulfurization plant making use of adsorption by active manganese oxide (Removal of SO₂ from flue gas), 2035
- Flue gas desulfurization and reclamation of gypsum (Discussion of ammonium bisulfite absorption and lime absorption), 1998
- Flue gas desulfurization experiments (Calcium oxide injection into boiler), 1426
- Flue gas desulfurization technology (Fundamentals and technological advances), 1603
- Flue gas desulfurization by Wellman--Lord process (Use of caustic soda wash to absorb S dioxide; process takes advantage of difference in solubilities of Na sulfite and NaH sulfite), 1657
- Flue gas recovery method and apparatus (Removal of SO₂ using packed-bed absorber containing cold aqueous sulfite solution), 1987
- Fluid bed studies of the limestone based flue gas desulfurization process. (Final report) (Reactivity of various limestone and dolomite sorbents), 1472 (PB-169495)
- Fluidized bed reactors (Pollution control applications of fluidized bed reactors are discussed), 1762
- Fossil fuel yields power+pollution (Flue gas desulfurization is major pollution control method; coal gasification and liquefaction offer alternatives), 1901
- Fuels with low sulfur content and smokeless fuels (Review; smoke and S dioxide emissions), 1502
- Fulham--Simon--Carves process for the recovery of sulphur from flue gases (Flue gases are scrubbed with ammonia liquor), 1091
- Full-scale desulfurization of stack gas by dry limestone injection. Volume I. (Final report) (Not an effective method), 2021 (EPA-650/2-73-019-a)
- Fundamental chemistry of sulfur dioxide removal and subsequent recovery via aqueous scrubbing (Chemistry of water scrubbing of flue gases in the presence of a base), 1673
- FW--BF dry adsorption system for flue gas clean up (Char is used as adsorber), 1841
- Gas desulfurization (S compounds (COS, C disulfide, entrained and vaporized S, and H sulfide) oxidized to C dioxide and S dioxide), 2128
- Gas purification (Contaminated gases passed through hydrogenated tar or petroleum products capable of binding or dissolving SO₂, soot, and tarry substances), 994
- Gas purification. III. Removal of sulfur dioxide traces from gas by manganese ferrite (Preparation of catalyst), 1545
- Gas-separating plant for waste gases containing sulfur compounds (Hot gases cooled in regenerative heat exchanger and then SO₂ removed), 1111
- Gaseous oxide recovery (Method for the reduction and recovery of SO₂ and nitrogen oxides from flue gas), 1725
- Hard coal mining in the USA and its future prospects (Gasification, liquefaction, and flue gas desulfurization offer solutions to SO₂ emission problems when coal is used as energy source), 1928
- High-strength acid containing H₂O₂ to scrub SO₂ (Aqueous scrubbing solution consists of sulfuric acid containing H₂O₂ and/or the peroxy acids of sulfur), 2042
- Hydrogen sulfide removal from gases (Scrubbing of gas with liquid containing basic material plus a phenolic-type material; activated C used as absorbent), 678
- IFP process (Removal of H sulfide and S dioxide from Claus unit tail gas and stack clean-up to reduce amount of S dioxide), 7392
- Improved dry purification of coke water gas (Removal of water, H₂S, and SO₂), 798
- Improvement in or relating to the removal of sulphur dioxide from gases (By adsorption on carbon impregnated with iodides and/or iodates), 1415
- Improvement of wet-type flue gas desulfurization method (Removal of SO₂ by scrubbing with caustic soda solution), 1809
- Improvements relating to the treatment of boiler flue gases (Washing with ammoniacal liquor), 590
- Improvements relating to the removal of sulfur dioxide from gases (Removal of SO₂ from gases in which it occurs in low concentrations), 762
- Industrial SO₂ scrubber (Scrubber intended to solve problem of S emission from plants burning heavy fuel oils), 1912
- Installation of the wet method Chemico process stack gas desulfurization system (Description of apparatus), 1747
- Instrumentation of an alkali scrubbing test facility (For removal of SO₂ from flue gas), 1647
- Instrumentation of a sulphur dioxide removal test facility using alkali scrubbing (Operation of powdered limestone injection plant), 1828
- International state-of-the-art of waste gas desulfurization in power plants (Major desulfurization processes are reviewed; 29 references), 2130
- Ion exchangers for adsorbing sulfur dioxide from air (Crosslinked vinyl polymers), 1616
- KD stack gas desulfurization system (Ammonia gas is sprayed into stack gas, introduction of cold water forms ammonium sulfite), 1735
- Kinetics of sulfation of alkalized alumina (Na₂O X Al₂O₃) (At 300 to 600°C), 1983
- Kinetics of the catalytic oxidation and heterogeneous sulfation of sulfur dioxide at low concentration (Investigation of various mixed metal oxides for recovery of S dioxide from simulated flue gas), 1846
- Kurhea-system stack gas desulfurization process (Process involves absorption and crystallization processes), 1719
- Large scale equipment using the IHI-CHEMICO process for removing sulphur dioxide from stack gas (Uses magnesium oxide slurry as absorber), 1980
- Large-scale experiments for desulfurization of power plant waste gases (Methods tested include injection of pulverized lime; adsorption by circulating coke, and desulfurization in a fluidized bed with calcium hydrate or hydrated brown coal ash), 1436
- Latest scrubber: sulfur, yes, sludge piles, no (Use of sodium phosphate as absorbent), 2145
- Limestone test results at the EPA alkali wet-scrubbing test facility at the TVA Shawnee Power Plant (Removal of S dioxide and particulates from flue gases), 1847
- Magnesia scrubbing (Removal of SO₂ from flue gases), 1863
- Making sulfur recovery from flue gases an economic process (Removal of SO₂ by washing with milk of lime),

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 Manufacturing method for a dilute sulfur dioxide absorbent (Manganese carbonate), 1908
 Manufacturing method of active carbon used in desulfurization (For removal of SO_2 from exhaust gases), 1909
 Mathematical model for simulation of the dynamic behavior of the Tyco process for SO_2 and NO_x removal, 2009
 Mathematical model for simulation of the dynamic behavior of the Tyco process for SO_2 and NO_x removal, 2007
 Medium- and small-scale wet type flue gas desulfurization devices (Caustic water solution (sodium sulfite) is scrubbing medium), 1899
 Method for removing sulfur dioxide from the flue gas of a combustion chamber (Limestone or dolomite powders are blown into the furnace), 1610
 Method of treating exhaust gases containing sulfur dioxide (SO_2 is oxidized to SO_3 then reacted with ammonia), 1522
 Method of separating sulfur dioxide from gaseous mixtures (Absorption by a water soluble trialkyl phosphate in aqueous solution), 2063
 Method of removing sulfur dioxide from gases (Addition of gaseous ammonia to gas flow and injection of liquid containing ammonium sulfate, sulfite, or bisulfite), 1524
 Method of separating and condensing sulfur dioxide by a polyvinyl chloride diaphragm containing dioctylphthalate (For desulfurization of flue gas), 1736
 Method of separating sulphur from sulphur dioxide (Desulfurization of flue gases), 387
 Method of removing sulphur dioxide and nitrogen dioxide from gases (By passing the gases through an equimolar molten bath of sodium hydroxide and potassium hydroxide), 1929
 Method of removing sulfur dioxide and sulfur trioxide from gases and producing ammonium sulfate therefrom (Regeneration of activated carbon (containing SO_2) in aqueous ammonia forming ammonium sulfate), 1469
 Method to prevent pollution with sulfur dioxide (Catalytic removal of SO_2 from stack gas with recovery of sulfuric acid), 1804
 Method to remove sulfur dioxide from exhaust gas (By contact with liquid magnesium hydroxide), 1906
 Method to remove sulfur dioxide from sintering furnace exhaust gas (By absorption with ammonium sulfite), 1907
 Methods for desulfurization of gases. 147. Meeting of the German Association for Chemical Equipment (Dechema) on October 11 in Frankfurt (Dry method using dolomite or calcium injection for removal of SO_2 from flue gas), 1439
 Mining research: dry process for desulfurization of waste gases containing dust (Use of activated coke), 1498
 Mohave/Navajo pilot facility for sulfur dioxide removal (Test of alkali absorption process for removal of S dioxide on pilot plant basis; use of limestone, lime, and soda ash as absorbers), 1556
 Molten carbonate process for SO_2 removal from stack gases: process description, economics, and pilot plant design, 1940
 Molten salt process for SO_2 control (Flue gas desulfurization), 2091
 Multi-stage removal of entrained solids and sulfur dioxide from gas streams (Using aqueous alkaline or slightly acidic scrubbing solutions), 2059
 Neutralization of acid gas components (Removal of S dioxide and HCl using MgO or Mg hydroxide with V oxide catalyst), 2137
 New Concept for scrubbing gases (Advantages of using slaked lime slurry), 1995
 New developments in gas-scrubbing processes (Thylox gas purification process; Pintsch light-oil recovery process; I.C.I. process for removing fly ash and SO_2 from flue gases; review), 460
 New flue gas desulfurizing process by spray drying method using $NaOH$ aerosols as absorbing chemical, 1946
 New flue gas desulfurization process (Absorption and catalytic oxidation of SO_2), 1857
 New limestone process for SO_2 removal from flue gases (Use of lime slurry scrubbing system), 1865
 New tool combats SO_2 emissions (CuO is SO_2 acceptor), 2065
 Nitrogen oxides control measures and desulfurization of boiler stack gas (Dry- and wet-type processes), 1632
 NKK S lime gypsum desulfurization plant (SO_2 is absorbed by carbide residues; gypsum is by-product of process), 1663
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 On stack gas desulfurization device for medium and small-sized boilers (Sprays liquid caustic soda into scrubbing drum), 1619
 One year S performance and operability of the Chemico/Mitsui carbide sludge (lime) additive SO_2 scrubbing system at Ohmuta No. 1 (156 MW-coal fired), 1869
 Ontario hydro S prototype limestone scrubber for SO_2 removal from clean flue gas (Review of design and operating variables; particulate material removed by electrostatic precipitators), 1654
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 Operating conditions of a Tsukishima-Barco type stack gas desulfurization device (Caustic soda solution is sprayed into the stack gas), 1722
 Operational performance of the Chemico basic magnesium oxide system at the Boston Edison Company. Part I (Desulfurization of flue gases), 1861
 Operational performance of the Chemico magnesium oxide system at the Boston Edison Company. Part II (Removal of SO_2 from flue gas), 1867
 Panel discussion on planning, designing, and utilizing the stack gas desulfurization system, 1945
 Panel discussion: significance of operation to date of 156-MW Chemico/Mitsui lime scrubbing system (Removal of sulfur dioxide from flue gases), 1879
 Physicochemical purification of smoke and gases containing sulfur derivatives (Removal of SO_2 by scrubbing with dilute ferric sulfate), 1588
 Pilot scale investigation of a Venturi-type contractor for removal of SO_2 by the limestone wet-scrubbing process. Final report, 1606 (PB--209 023)
 Pilot scale up of processes to demonstrate utilization of pulverized coal flyash modified by the addition of limestone-dolomite sulfur dioxide removal additives. Final report, 1607 (PB--213639)
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 Planning and operation of Wellman--Lord desulfurization process (Uses sodium sulfite or potassium sulfite as absorbents), 2008
 Pollution from power production. Preprint (Use of limestone (wet or dry processes) to remove SO_2 from flue gases), 1509
 Pollution abatement: partial and total sulphur recovery (SO_2 is reacted with H_2S to produce elemental sulfur and water), 1749
 Pollution abatement with emphasis on SO_2 removal (Design of lime scrubbing pilot plant), 1627
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 Possibility of the use of vanadium catalysts in fluidized bed for the removal of sulfur dioxide from gases, 1669
 Practical establishment of a wet type sulfur removal process for coal fired boiler in large scale (Use of calcium hydroxide absorbent for removal of SO_2 from flue gas), 2005
 Practical establishment of a wet type sulphur-removal process for a coal-fired boiler on the large scale (Using calcium hydroxide as absorbent), 2006
 Preparation characteristics and desulfurization potential of Iowa coals. Research rept. 1972-73, prepared by Pittsburgh Energy Research Center, PA (Preparation characteristics of coal samples with emphasis on physical desulfurization), 2069 (PB--226 249/1)
 Present performance and scope for improvement in power-station flue-gas washing equipment for the removal of sulfur dioxide (Battersea effluent process; Howden-I.C.I. cyclic lime process; Fulham--Simon--Carves process; review), 998
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 Present studies on wet desulfurization at the Amagasaki-Higashi power station (Description of calcium hydroxide--calcium sulfate method), 1911
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 Problems involved in the protection of the air from pollution with power plant-generated gases (Increased energy production expected to cause larger increase in S dioxide than fly ash output), 1781
 Proc. Assoc. Prev. Ind. Pub. Nuisance, Symp. (Method is very satisfactory), 1656
 Procedure for recovery of sulfur dioxide contained in industrial gases in any concentration whatsoever (Quinoline reacts with SO_2 to form sulfite which is oxidized to sulfate and combined with ammonia), 1526

- Proceedings of international conference on fluidized-bed combustion (2nd) (Collection of 23 papers), 1333 (PB--214 750/2)
- Process and apparatus for burning sulfur-containing fuels (Use of calcined limestone and dolomite to remove SO_2 from flue gases), 1931
- Process and apparatus for burning sulfur-containing fuels (Regeneration of sulfur oxide acceptors), 1932
- Process for using n-alkyl lactam for stripping sulphur dioxide from gas streams and recovering liquid sulphur dioxide (N-methyl pyrrolidone is preferred lactam; solvent can be recycled), 1873
- Process for removing sulfur compounds from gas (Aqueous suspension of a hydrolyzed admixture of an amphoteric component and a basic component), 2045
- Process for using n-alkyl lactam for stripping sulfur dioxide from gas streams and recovering liquid sulphur dioxide (Removal of SO_2 from flue gas using N-methyl pyrrolidone), 1988
- Process for removal and reduction of sulphur dioxide from polluted gas streams (Adsorption of SO_2 on activated carbon and subsequent reduction to elemental sulfur), 2102
- Process for recovering sulfur dioxide from gases (Absorption by aqueous sodium sulfite solution), 2122
- Process for using n-alkyl lactams for stripping sulfur dioxide from gas streams (Removal of SO_2 from flue gas using N-methyl pyrrolidone), 2000
- Process for producing sulphur by reducing sulphur dioxide (Reducing agent is carbon monoxide), 419
- Process for the recovery of sulfur dioxide in residual gases (Absorption in aqueous solutions of ammonium sulfite and/or bisulfite), 1518
- Process of obtaining sulfur, etc., from furnace-gases (Use of incandescent coke to reduce SO_2 to sulfide which is subsequently decomposed at high temperature), 201
- Process of obtaining sulfur from furnace-gases (SO_2 is washed (water) from gas and reduced in a bed of incandescent coke or coal), 2153
- Processes for removal of sulfur from combustion products: challenge to chemists (Discussion of the wet limestone process, Monsanto "Catox" process, molten carbonate process, and a process proposed by the author), 1672
- Production of low sulfur coal (Patent), 2151
- Progress of dry-process flue-gas desulfurization in Japan (Discussion of wet and dryprocesses), 1819
- Progress report on sulfur dioxide, 2111
- Projected utilization of stack gas cleaning systems by steam-electric plants. (Final report) (Discussion of seven desulfurization methods), 1974 (PB-221356)
- Purification of waste gases (Use of metal carbonate melt to remove H_2S , SO_2 , nitrogen oxides, CO, and fly ash from flue gas), 1732
- Purification of sulfur dioxide-containing waste gases with sulfur recovery (Use of solutions containing benzoic acid, nicotinic acid, or dibutyl hydrogen phosphate and their Na or K salts or urea or thiourea in water of organic solvents), 2138
- Purification of fuel gases (Removal of H_2O , O_2 , H_2S , SO_2 , NH_3 , HCN, NO, and organic compounds), 773
- Purification of flue gases from sulfur dioxide (Scrubbing with aqueous solution of magnesium carbonate), 571
- Purification of gases containing sulfur dioxide (By injection of fine-grained pyrite), 1101
- Purification of flue gases from sulfur dioxide (By passing through MgO solution or over MnO_2 catalyst after mixing with air), 567
- Purification of gases capable of hydrate formation (Removal of SO_2 , H_2S , and CO_2 by bringing hydrated gas in contact with aqueous solution of a metallic hydroxide or an alkaline salt, or one of the ethanol amines), 662
- Purifying gases (Removal of H_2S or SO_2 from gases with simultaneous precipitation of S by activated washing solution composed of oxygenated compounds of thiosulfate), 456
- Purifying sulfur dioxide-containing gases (Removal of SO_2 by reduction to S followed by settling, precipitation, and filtration), 453
- Purifying gases of sulfur by using waste products from acetylene manufacture (Producer gas cooled and scrubbed with saturated aqueous solution of $Ca(OH)_2$), 956
- RC/Bahco system for removal of sulfur oxides and fly ash from flue gases (Design and operating variables; system uses two-stage lime slurry wet scrubbing process), 1555
- Reactions of organic sulfur compounds in town gas with mechanically activated α -ferric oxide. I. Ethyl mercaptan (Above 350° total S in ethanethiol is converted to FeS in solid phase and gas is freed from S), 1442
- Recent experience of the Wellman-Lord SO_2 recovery process (For removal of SO_2 from flue gases), 2092
- Recent movement of desulfurization in USA (Comparison of Japanese and American desulfurization technology), 2053
- Recovering weak gaseous acids from gases (Removal from gases of H_2S , CO_2 , SO_2 , etc., by washing with liquids such as acetic acid ester of tetramethyldiaminopropanol, tetramethyldiaminopropanol ethyl ether, and tetrahydroxyethyldiaminopropanol), 486
- Recovering sulfur dioxide from gases (Aqueous solution of Na, Li, or Be sulfite used to remove S dioxide), 2123
- Recovery of sulphur in a marketable form from flue gases (Recovery of S by Fulham--Simon--Carves process in which flue gas reacts directly with ammonia liquor, and solution is processed to give ammonium sulfate and S), 1308
- Recovery of sulfur dioxide from industrial wastes (By catalytic oxidation using a sulfur--vanadium--silica gel catalyst), 1596
- Recovery of sulfur dioxide from waste gases (Regeneration of sulfite-bisulfite solutions), 586
- Recovery of sulphur (From SO_2 removed from flue gases by washing (water)), 223
- Recovery of sulphur from flue gases (Scrubbing with ammonium carbonate or sodium carbonate), 785
- Recovery of sulfur dioxide from waste gases (Scrubbing with ammonium sulfite-bisulfite solutions), 421
- Recovery of sulfur from gas streams containing hydrogen sulfide and sulfur dioxide (Treatment of stack gas with water), 2026
- Recovery of sulphur dioxide from waste gases (By reaction with an aqueous solution of sodium, lithium, or beryllium sulfite), 1696
- Recovery of sulfur dioxide from flue gases (By the H_2SO_4 or $(NH_4)_2SO_4$ processes), 1010
- Recovery of sulphur dioxide (SO_2) from gas streams and precipitation of aluminium fluoride product (Use of fluoriferous calcium phosphate mineral as absorbent), 1792
- Recovery of sulfurous acid from furnace gases (Cold water is used as an absorbent (1881)), 2152
- Recovery of sulfur dioxide from gas mixtures (Using NaOH or an aqueous emulsion of organic amines), 1096
- Recovery of sulphur dioxide (Gas is passed with O_2 through bed of reactive UO_2 particles), 1872
- Recovery of sulphur dioxide from gases (Solvents used are aqueous solutions of alkali hydroxides or alkali sulfites; aluminium chloride is used to increase SO_2 recovery), 363
- Recovery of sulfur dioxide from waste gases (Comparison of various sulfite-bisulfite solutions), 515
- Recovery of free sulfur by removal of hydrogen sulfide and sulfur dioxide in the outflow of a condenser of a catalytic reaction zone (Desulfurization of flue gas and recovery of free sulfur on catalyst bed), 1576
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- Recovery of sulfur dioxide from waste gases (Scrubbing with ammonia solution), 398
- Recovery of sulfur dioxide (Absorption on uranium dioxide), 1774
- Recovery of sulfur dioxide from waste gases (Optimum concentration of ammonia in scrubbing solution), 489
- Reducing desorption of sulfuric acid in coke sorbent regeneration (By contact with H_2S at the adsorption temperature), 1702
- Reduction of atmospheric pollution. Volume 1. Main report. Final report June 1970--June 1971. See also Volume 2, PB--210 674 (Reduction of SO_2 , nitrogen oxide, and particulate emissions in flue gas by use of fluidized bed coal combustion process with added limestone or dolomite), 1597 (PB--210 673)
- Reduction of atmospheric pollution by the application of fluidized-bed combustion. Annual report. July 1970--June 1971 (Absorption by limestone of sulfur oxides released during combustion), 1544 (ANL/ES-CEN-1004)
- Reduction of atmospheric pollution. Volume 2. Appendices 1-3. Final report Jun 1970--Jun 1971. See also Volume 1, PB--210 673 and Volume 3, PB--210 675 (Reduction of SO_2 , nitrogen oxide, and particulate contents of flue gas by fluidized bed combustion of coal), 1595 (PB--210 674)
- Reduction of SO_2 in gas mixtures (By reaction with a hydrocarbon oil (reducing agent)), 1971
- Reduction of atmospheric pollution by the application of fluidized-bed combustion. (Annual report) (Addition of limestone to fluidized bed), 1455 (ANL/ES-CEN-1001)
- Reduction of atmospheric pollution. Volume 3. Appendices 4-9. Final report Jun 1970--Jun 1971. See also Volume 2, PB--210 674 (Reduction of SO_2 content of flue gas by fluidized bed combustion of coal), 1598 (PB--210 675)
- Regenerative limestone process for fluidized bed coal combustion and desulfurization (Removal of SO_2 from flue gas using limestone adsorbent), 1580 (PB-198822)
- Regeneration method of active carbon used in flue gas desulfurization (Heating in nitrogen at 850°C), 2081
- Removal and recovery of sulfur dioxide from high-temperature flue gas (Process for conversion of S dioxide to sulfuric acid; S dioxide absorbed in dilute sulfuric acid containing Mn sulfate as oxidation catalyst), 2080
- Removal and recovery of sulphur dioxide from power plant gases using magnesium based processes (Description in detail of Chemico Process and review of some other processes; desulfurization of stack gases is likely alternative to use of low-S fuels to reduce S dioxide

- emissions), 1630
- Removal and recovery of SO_2 from power station flue gases (Discussion of Chemicom (aqueous suspension of magnesium oxide) process), 1881
- Removal of sulfur dioxide from stack gases: recent developments in lime-limestone wet scrubbing technology, 2011
- Removal of acidic constituents from gases (Removal of H_2S , SO_2 , or CO_2 from gas by bringing it into contact with solution of amine, H_2O , and a monohydric alcohol), 713
- Removal of sulfur dioxide from flue gases (Flue gas passed through 2 successive packed sections each with recirculation of NH_4 salt solution, in single tower), 1169
- Removal of SO_2 and dust from stack gases (Fuel desulfurization, especially hydrodesulfurization, is not economically feasible so removal of S dioxide from stack gas has been studied in great detail), 1403
- Removal of sulphur dioxide from stack gases by scrubbing with limestone slurry: operational aspects of the scaling problem, 1541
- Removal of SO_2 and $\text{NO}/\text{sub x/}$ by molecular sieve zeolites (Desulfurization of stack gases), 1837
- Removal of sulfur dioxide from gases (Scrubbing with NaOCl--NaOH solution), 2132
- Removal of sulfur dioxide from waste gases (Water and lime (or NaOH , soda, or NH_3) are used as scrubbing fluid), 1825
- Removal of acidic components from gases (Removal of CO_2 , SO_2 , and HCN from gases at $<120^\circ$ and >10 atm with 30-60% aqueous Na_2CO_3), 1207
- Removal of sulphur dioxide from gas streams (Scrubbing with aqueous magnesium sulfite-bisulfite solution), 2088
- Removal of SO_2 from flue gases (Discussion of various wet and dry methods), 1432
- Removal of sulfur dioxide from flue gas (By NaOH spray), 1769
- Removal of organic sulfur from town gas (Reduction of organic S to 10 grains/100 cu. ft. or less by oxidation of CS_2 , COS , and thiols to SO_2 ; removal of SO_2 by scrubber), 839
- Removal of sulfur dioxide from flue gases (Oxidation of SO_2 to SO_3 ; absorption of some SO_2 in $\text{Ca}(\text{OH})_2$ to form CaSO_3), 477
- Removal of sulfur dioxide from gases (Review of methods with and without subsequent recovery of S dioxide; efficiency of methods), 1851
- Removal of sulfur dioxide from waste gases (Scrubbing with an aqueous magnesium oxide sulfite slurry), 1711
- Removal of sulphur oxides from flue gases by powdered limestone, 1895
- Removal of acidic material from a gaseous mixture (Removal of H_2S , SO_2 , CO_2 and other acidic impurities from gaseous hydrocarbons by use of aqueous solutions of organic bases in countercurrent absorption tower), 744
- Removal of sulfur dioxide from waste gases (Description of equipment for scrubbing waste gas), 7441
- Removal of sulfur oxides from flue gases and stack gases (By addition of NH_3 and collection of sulfites and sulfates formed on an electrostatic precipitator), 1185
- Removal of sulfur dioxide from flue gases: BCR catalytic gas phase oxidation process (Vanadium catalyst was developed; H_2SO_4 is by-product), 1376
- Removal of sulfur dioxide from stack gases by scrubbing with ammoniacal solutions: pilot scale studies at TVA, 1855
- Removal of $\text{SO}/\text{sub x/}$, $\text{NO}/\text{sub x/}$ gas by active carbon (Flue gas purification), 2052
- Removal of sulphur dioxide and $\text{NO}/\text{sub x/}$ by molecular sieve zeolites. Paper 61, 1848
- Removal of sulfur dioxide from gas streams (Scrubbing with saturated solution of Mg bisulfite and sulfite), 2127
- Removal of pyrite from coal by dry separation methods. Report of investigations, prepared in cooperation with Morgantown Energy Research Center, WV (Reduction of SO_2 emissions from coal-burning power plants by removing pyrites from coal prior to burning; equipment), 1978 (PB--221 627/3)
- Removal of air pollution by activated carbon (Removal of SO_2 from flue gas), 2029
- Removal of sulfur oxides from flue gas (Regeneration of molten alkali metal carbonate absorbent), 1465
- Removal of sulfur dioxide in exhaust gas with red mud slurry (Sulfite is oxidized to sulfate, and then mud slurry absorbs S dioxide), 1824
- Removal of SO_2 from flue gas mixtures with fibers containing polymeric amines (Styrene-dimethylaminopropylmaleimide (SDM) used as sorbent for S dioxide; absorption increased with increased moisture and decreased temperature), 1485
- Removal of sulfur dioxide from stack gases by scrubbing with limestone slurry: operational aspects of the scaling problem, 1557
- Removal of sulfur dioxide from stack gases by scrubbing with limestone slurry: design considerations for demonstration full-scale system at TVA (Major design factors included limestone handling and grinding; scrubber design with respect to gas velocity, entrainment separation, liquor flow rate, limestone amount, and particle size; particulate removal; equipment arrangement; flue gas handling and conditioning; instrumentation and control; construction materials; and solid waste disposal methods, 1554)
- Removal of sulfur dioxide from flue gases (Removal by scrubbing with solution containing NaOH in excess and Ca sulfate), 2136
- Removal of sulfur oxides from flue gases (Review; 53 references; economics), 791
- Removing and recovering sulfur dioxide from gases such as boiler furnace or smelter gases, 594
- Removing and recovering sulfur dioxide from waste gases (Absorption of SO_2 by cooled aqueous solution of salt of organic acid), 449
- Removing SO_2 from stack gases (Discusses the various sodium-based methods, ammonia processes, alkali absorbents, and lime-limestone scrubbing processes for SO_2 removal), 1918
- Removing sulfur dioxide from flue gases (Wash with solution containing ferric and Mn ions as catalysts to increase the oxidation of SO_2 to H_2SO_4), 394
- Removing sulfur dioxide from fuel gases at thermal generating plants for electric power. III. Effect of the nature and preliminary treatment of a reagent on the degree of purification (Removal of S dioxide using lime; to obtain high degree of purification, ground chalk or lime should be used), 1419
- Removing sulphur dioxide from stack gases (Brief evaluation of the technology to date (1973) especially in USA and Japan), 1924
- Removing sulphur dioxide is possible - but expensive (Stack gas desulfurization), 2047
- Removing sulfur dioxide from gases (By absorption in an aqueous solution of a nonvolatile water-soluble salt, e.g. alkali, or NH_3 salt of a weak acid such as benzoic, fumaric, phthalic, salicylic, or sulfanilic acids), 607
- Removing sulfur by the catalytic oxidation of the gases (Gases containing H_2S , CH_3SH , and COS oxidized with air or O to H_2O , CO_2 , and SO_2 over catalyst), 1211
- Removing SO_2 from stack gases (Review of full-scale and prototype processes with respect to stage of technological development, process design and operation, advantages, disadvantages, and economic feasibility), 7440
- Removing sulfur dioxide from flue gases (Treatment with acid solution of iron sulfate and then with alkaline suspension of iron hydroxide), 392
- Removing sulfur dioxide from flue gases (Washing with aqueous MnO_2 and Mn ions), 373
- Removing sulfur dioxide from fuel gas (Use of high-frequency electric discharge), 402
- Removing weak gaseous acids from gases (Use of diamines, polyamines, and salts of amino-, imino-, or tertiary N- acid derivatives), 458
- Repeated absorption-desorption experiment and economic evaluation of the plant (Apparatus and operating conditions), 1477
- Research and development in Czechoslovakia on sulphur removal from boiler flue gas (Discussion of various methods being studied), 1836
- Results from pilot tests of the Molten Carbonate Process for SO_2 removal (From flue gas), 2090
- Review of Babcock and Wilcox air pollution control systems for utility boilers (Limestone wet scrubbing system to remove SO_2 and fly ash from flue gas), 1874
- Scrubber design for removing sulfur dioxide from off gases of coal burning power plants and metallurgical smelters (Scrubbing medium is aqueous slurry of lime), 1826
- Selective absorption of acid gases (H_2S , HCN , and SO_2 absorbed from gaseous mixtures containing CO_2 by limiting time of contact with alkaline scrubbing medium to less than 0.05 sec), 198
- Semi-wet type flue gas desulfurizer and desulfurization by activated carbon (Semi-wet method uses caustic soda), 2036
- Separation of fly ash and sulfur dioxide from flue gases (Using alkali-metal bicarbonate crystal particles), 1520
- Separation and removal of selected gas components from gaseous mixtures (Electrical method makes use of electronegativity of SO_2), 1873
- Separation of sulfur dioxide from gases (By contact at atm pressure and 80°F with a mixture of H_2O and nitrogen bases to form an aqueous solution of nitrogen base-- H_2SO_4), 660
- Shell flue gas desulfurization process (Adsorption of SO_2 with copper oxide), 1830
- Simultaneous removal of fly ash and SO_2 from gas streams by a shaft-filter-sorber (Bed of slowly falling sorbent pebbles (alkalized alumina) simultaneously removes fly ash and SO_2), 1530
- SO_2 -abatement system builds on success (Combined use of Wellman--Lord and Claus processes on flue gas), 1803
- SO_2 eliminating filter (Sodium carbonate treated glass

- fiber filter efficiency), 1626
- SO₂ free two-stage coal combustion process (Coal S is not oxidized under reducing conditions existing during combustion), 1745 (PB-211888)
- SO₂ recovery via activated carbon (Desulfurization of boiler flue-gases), 1744
- SO₂ scrubbing systems: commercial availability, 2120
- SO₂-scrubber at the Grycksbo Paper Mill (Comparison of limestone and hydrated lime), 1829
- Solvent mixtures for selectively absorbing sulfur dioxide and hydrogen sulfide from gaseous mixtures (Using a mixture of water, hydroxy or alkoxy amines, and glycol), 1592
- Some contributions of chemistry and chemical engineering to steam generation (Two methods of SO₂ removal from flue gases), 543
- Some problems of dry processes for removing SO₂ from flue gases (Engineering valuations of alkalinized alumina, active C, and modified Claus processes for removal of S dioxide from flue gas), 194
- Sorption of sulfur dioxide by synthetic resins (Ion exchange resin), 1437
- Sorption of sulfur dioxide on silica gel, 1402
- Source/control of air emissions (Equipment and methods), 1786
- Stack gas desulfurization method by activated carbon (New method for disposal of product (H₂SO₄) and regeneration of activated carbon), 1710
- Stack gas desulfurization (State-of-the-art in Japan), 2109
- State-of-the-art for SO₂ control for coal-fired power plants (Discussion of limestone/lime scrubbing, magnesia scrubbing, sulfite-sulfate scrubbing and catalytic oxidation methods or removal of SO₂ from flue gas), 1835
- State-of-the-art report on status of development of process for abatement of SO₂ emissions by stack gas treatment to American Electric Power Service Corporation, March 30, 1973 (Discussion of various scrubbing methods), 1838
- State of the art of flue gas and fuel desulfurization - pros and cons, 1813
- Status of technology of commercially offered lime and limestone flue gas desulfurization systems (SO₂ removal), 1868
- Status of C-E S air quality control systems (Wet lime/limestone scrubbing system for removing SO₂ from flue gas), 1854
- Status of the development of processes for controlling SO₂ emissions from stationary sources (Feasibility of dry limestone injection system), 1444
- Status of development of process for abatement of SO₂ emission by stack gas treatment (Requirements for commercially available status; potential control processes; demonstration plants; current reliability; forecasting future reliability; data sheets on demonstration plants), 1944 (NP-20096)
- Status of Japanese flue gas desulfurization technology (Most processes used produce salable by-products), 1839
- Status of SO₂ removal systems (Limestone scrubbing seems to be the only technologically feasible method), 1548
- Status of application of lime-limestone wet scrubbing process to power plants (removal of SO₂ from flue gas), 1664
- Status report on lime or wet limestone scrubbing to control SO₂ in stack gas (Advantages and disadvantages), 1817
- Staub: Reinhaltung der Luft in English. Volume 30, Number 2, 1970 (Reduction of SO₂ emissions by desulfurization of coal), 1513 (TI-7050047/2)
- Stripping of sulphur dioxide from gas streams by use of N-alkyl lactams, 1877
- Studies on the removal of sulfur dioxide from hot flue gases to prevent air pollution (By three-step formation of ammonium sulfate), 1397
- Study of characterization and control of air pollutants from a fluidized-bed combustion unit. Carbon-burnup cell (Removal of SO₂ from flue gas by injection of limestone into combustion chamber), 1699 (PB--210 828)
- Study of sulfur recovery from coal refuse (Removal of H₂S and SO₂ with recovery of sulfur), 1594 (PB-203488)
- Study of the desulfurization of exhaust gas by a porous plate wetted stage tower (2) (Using a 5% sodium carbonate solution), 1832
- Study on desulphurization of flue gases by the active carbon process using steam desorption (Part 1) - desorption of sulphur dioxide from active carbon, 1724
- Study on desulphurization of flue gases by the active carbon process using steam desorption (part 4) - deterioration and regeneration of active carbon (Exposure to O₂ at about 300°C had considerable influence on adsorptive capacity of activated C for S dioxide), 1800
- Study on desulfurization of coal (Adsorption agent is a combination of manganese oxide and calcium carbonate or calcium hydroxide), 1620
- Study on desulfurization of flue gases by the active carbon process using steam desorption (Part 4) - variation of properties of active carbon used on a test plant (Adsorption of SO₂), 1860
- Study on desulphurization of flue gases by the active carbon process using steam desorption (Part 5) - deterioration and regeneration of active carbon (Adsorption of SO₂), 1858
- Study on desulphurization of flue gases by the active carbon process using steam desorption (part 3) - variation of properties of active carbon used on a test plant (Adsorptive capacity of activated C for S dioxide was influenced by chemical properties of surface oxides and not structural properties), 1799
- Successful reduction of sulphur dioxide to sulfur on a large scale and the application of this process to emissions from power stations (SO₂ is reduced with natural gas to elemental sulfur and H₂S to be used with W-L-SO₂-removal process), 2019
- Successful reduction of SO₂ to sulfur on large scale and the application of this method to emission from power plants (Wellman--Lord process), 2022
- Successful removal of sulfur dioxide from flue gas (PROTOTYPE catalytic oxidation process system removes S dioxide from flue gases of a coal-burning power plant and converts it into commercial grade sulfuric acid), 1470
- Sulfate control in ammonia flue gas desulfurization (Regeneration of aqueous ammonium sulfite solution used to remove SO₂ from flue gas), 1737
- Sulfur dioxide collection system (SO₂ is oxidized to SO₃ upon contact with ozone-producing electrodes), 2012
- Sulfur dioxide disposal method (Moisture is added to prevent white fume formed when ammonia reacts with S dioxide), 1821
- Sulfur dioxide removal by liquid absorption (Absorption in aromatic amines (xylydine or dimethylaniline)), 1172
- Sulfur dioxide removal in Venturi scrubbers (Using strong sodium carbonate solution), 1645
- Sulfur dioxide (Removal from effluent gases and recovery of useful products), 635
- Sulfur dioxide removal in Venturi scrubbers (Comparison of various scrubbing liquors), 1667
- Sulfur dioxide - its chemistry and removal from industrial waste gases (Review of methods; 253 references), 1061
- Sulfur dioxide recovery process (Water is sprayed into the tower to cool the gas and absorb the SO₂), 1525
- Sulfur dioxide removal from waste gases: status report for Europe (Review of nine processes in use in Western Europe), 1671
- Sulfur dioxide emission control by hydrogen sulfide reaction in aqueous solution (SO₂ is absorbed by citric acid or other carboxylate solution), 1833
- Sulfur dioxide control. Selected bibliography. Rept. for 1964-Oct 1973, Supersedes NTIS-PK--109 (Contains 150 selected abstracts; experimental combustors; coal desulfurization), 2068 (CGM--73-11804/4)
- Sulfur dioxide scrubbers. Stone and Webster Ionics Process. (Final report) (Comparison of several different types of scrubbers for use with this process), 1508 (PB-189377)
- Sulfur dioxide emission control for industrial power plants (Efficiencies and economic feasibilities of dry additive injection system, wet scrubbing with lime, soda ash scrubbing, and caustic soda scrubbing with lime regeneration; pilot plant for lime regeneration system), 1543
- Sulfur dioxide removal: Part 1. Ideal extraction route elusive, 1920
- Sulfur dioxide removal: part 2. Plethora of process options open to electrical producers (Variety of processes for removal of SO₂ from flue gas), 1934
- Sulfur dioxide recovery process as applied to acid plant tail gas (Scrubbing with an (NH₄)₂SO₃-NH₄H₂SO₃ solution), 7437
- Sulfur from sulfur dioxide-containing gases (Pass through charge saturated with Na₂CO₃, Na₂SO₄, or Na₂S at 700 to 1100°C), 583
- Sulfur production using carbon oxide regenerant (Regeneration of molten salt mixture containing alkali metal carbonates for removal of SO₂ from flue gas), 1466
- Sulfur production using carbon regenerant (Regeneration of molten salt mixture containing alkali metal carbonates used to remove SO₂ from flue gas), 1468
- Sulphur dioxide: its chemistry as related to methods for removing it from waste gases (Processes involving reduction of SO₂ to sulfur appear promising), 1862
- Sulphur dioxide technology is available say EPA (Cost of scrubbing equipment; sludge disposal), 2025
- Summary of desulphurization processes for flue gas and Claus unit tail gas (details of 16 processes are presented in tabular form), 1643
- System of SO₂ removal from flue gases (Five desulfurization methods using different absorbents and adsorbents are described), 1935
- Take sulfur out of waste gases (Cyclic dry process developed to remove 98.5% of S dioxide from Claus incinerated off-gas containing 1.77% S dioxide), 1784
- Take sulphur out of waste gases (Description of Westvaco process using activated carbon for SO₂ removal), 1780
- Technical trials on activated coke from coal for adsorptive waste gas desulphurization with integrated

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