



## SELECTED PUBLICATIONS - ACTIVE RESEARCH AREAS

### SULFUR HANDLING

#### **The H<sub>2</sub>S/H<sub>2</sub>S<sub>x</sub> System Including Liquid Sulfur Degassing**

Studies on the Release of H<sub>2</sub>S from Liquid Sulfur

P.D. Clark, K.L. Lesage and T. MacDonald

Presented at the 1992 GRI Liquid Redox Sulfur Recovery Conference, Austin, Texas,  
October 4 - 6, 1992

ASR Quarterly Bulletin

Vol. XXIX, Nos. 2, 3 & 4, July 1992 - March 1993, pp. 43 - 60

Improving the Quality of Claus Produced Sulfur by Removal of Residual H<sub>2</sub>S

P.D. Clark, K.L. Lesage, A.K. Neufeld, T. McDonald and A.J. Mason

Proceedings of Sulphur '94, Tampa, Florida, November 6 - 8, 1994

ASR Quarterly Bulletin

Vol. XXX, No. 4, January - March 1994, pp. 1- 18

Degassing Liquid Sulphur

B. Wassink and J.B. Hyne

ASR Quarterly Bulletin

Vol. XXVII, No. 4, January - March 1991, pp. 14 - 41

Investigations into the Chemical Mechanisms of Liquid Sulfur Degassing and  
their Relevance to Industrial Degassing Systems

P.D. Clark, K.L. Lesage, A. Mason, T. McDonald and A.K. Neufeld

ASR Quarterly Bulletin

Vol. XXXI, No. 1, April - June 1994, pp. 23 - 64

Studies on the Chemistry of H<sub>2</sub>S and H<sub>2</sub>S<sub>x</sub> in Liquid Sulfur

P.D. Clark, K.L. Lesage, A.K. Neufeld, A.J. Mason and T. McDonald

Proceedings of the 7th Inorganic Ring Systems Conference (IRIS)

Banff, Alberta, August 7 - 12, 1994

Phosphorus, Sulfur and Silicon, 93-94 473 - 475 (1994)

The H<sub>2</sub>S/H<sub>2</sub>S<sub>x</sub> Liquid Sulfur System:  
Application to Sulfur Degassing and Removing Low Levels of H<sub>2</sub>S from Sour Gas Streams  
P.D. Clark, E. Fitzpatrick and K.L. Lesage  
Proceedings of the 1995 AIChE Meeting  
March 19 - 23, 1995  
Session No. 54, Houston, Texas  
ASR Quarterly Bulletin  
Vol. XXXI, No. 3, October - December 1994, pp. 1 - 15

The Degassing of Solid Sulfur in Block Inventory  
P.D. Clark, A.K. Neufield, J. Simion and R. Underhill  
ASR Quarterly Bulletin  
Vol. XXXIII, No. 2, July - September 1996, pp. 60 - 74

H<sub>2</sub>S Solubility in Liquid Sulfur as a Function of Temperature and H<sub>2</sub>S  
Gas Phase Partial Pressure  
P.D. Clark, K.L. Lesage, E. Fitzpatrick and P.M. Davis  
ASR Quarterly Bulletin  
Vol. XXXIV, No. 3, October - December 1997, pp. 2 - 19

The FTIR Analysis of Liquid Sulfur for the Determination of H<sub>2</sub>S, H<sub>2</sub>S<sub>x</sub> and Hydrocarbons  
K.L. Lesage  
ASR Quarterly Bulletin  
Vol. XLV, No. 1, April - June 2008, pp. 25 - 44

The Solubility of H<sub>2</sub>S in Liquid Sulfur.  
R. Marriott, E. Fitzpatrick and K. Lesage.  
Fluid Phase Equilibria 269 (2008) 69-72

### **Sulfur Corrosion by Wet Elemental Sulfur**

Corrosion of Carbon Steel and Aluminum in Aqueous Sulphur Systems  
D.D. Macdonald and B.E. Roberts  
ASR Quarterly Bulletin  
Vol. XII, No. 1, April - June 1975, pp. 29 - 43

Corrosion of Steels by High Temperature Sulphur and Hydrogen Sulphide Gas  
D.D. Macdonald  
ASR Quarterly Bulletin  
Vol. XII, No. 2, July - September 1975, pp. 27 - 39

The Corrosion of Carbon Steel by Wet Elemental Sulphur  
D.D. Macdonald, B. Roberts and J.B. Hyne  
Corrosion Science  
Vol. 18, 1978, pp. 411 - 425  
ASR Quarterly Bulletin  
Vol. XIII, No. 3, October - December 1976, pp. 12 - 41

Corrosion of Carbon Steel During Cyclical Exposure to Wet Elemental Sulphur and the Atmosphere

D.D. Macdonald, B.E. Roberts and J.B. Hyne

Corrosion Science

Vol. 18, 1978, pp. 499 - 501

More on the Mechanisms of Wet Sulphur Corrosion of Steel - The Effect of pH and Chloride Ion

C.L. Labine, N.I. Dowling and J.B. Hyne

ASR Quarterly Bulletin

Vol. XXI, Nos. 3 & 4, October 1984 - March 1985, pp. 1 - 20

Thiobiacilli and Wet Sulphur Corrosion

R.D. Bryant and E.J. Laishley

Department of Biology, University of Calgary

and C.L. Labine and J.B. Hyne, Alberta Sulphur Research Ltd.

ASR Quarterly Bulletin

Vol. XXII, No. 1, April - June 1985, pp. 1 - 11

Effect of Anions on the Wet Sulphur Contact Corrosion of Mild Steel

N.I. Dowling, C.L. Labine and J.B. Hyne

ASR Quarterly Bulletin

Vol. XXII, Nos. 2 & 3, July - December 1985, pp. 1 - 15

Corrosion by Wet Elemental Sulphur

J.B. Hyne and N.I. Dowling

Proceedings, Asian-Pacific Corrosion Control Conference

September 18 - 22, 1989, Singapore

ASR Quarterly Bulletin

Vol. XXV, No. 4, January - March 1989, pp. 17 - 28

The Copper Strip Corrosion Test - Understanding and Supplementing It

P.D. Clark and K.L. Lesage

Proceedings, 1991 Laurance Reid Gas Conditioning Conference

Norman, Oklahoma, March 4 - 6, 1991

ASR Quarterly Bulletin

Vol. XXVII, No. 1, April - June 1990

Corrosive Attack on Portland Cement Concrete by Microbially Generated Acidity

E.J. Laishley, R.D. Bryant and B. Wassink

ASR Quarterly Bulletin

Vol. XXIX, No. 1, April - June 1992, pp. 17 - 28

Tankers and Gondola Hauling of Liquid and Solid Sulfur: Understanding and Managing the Corrosion Challenges

J.B. Hyne and N.I. Dowling

Presented at the 1995 NACE Conference

March 27, 1995, Orlando, Florida

also published in ASR Quarterly Bulletin

Vol. XXXI, No. 4, January - March 1995, pp. 24 - 32

Understanding and Mitigating Corrosion During Handling and Transportation  
of Elemental Sulphur

N.I. Dowling, P.D. Clark and J.B. Hyne

Proceedings of Sulphur '96, Vancouver, B.C., October 20 - 23, 1996, pp. 147-159

also published in ASR Quarterly Bulletin

Vol. XXXIII, No. 1, April - June 1996, pp. 15 - 28

Mitigation of the Corrosion of Carbon Steel by Wet Elemental Sulfur Using Zinc Salts,  
Part I: Laboratory Studies

P.D. Clark, N.I. Dowling and K.S. Cook

ASR Quarterly Bulletin

Vol. XXXVII, No. 3, October - December 2000, pp. 1 - 15

Mitigation of the Corrosion of Carbon Steel by Wet Elemental Sulfur Using Zinc Salts,  
Part II: Field Studies

P.D. Clark, N.I. Dowling and F. Bernard (Alberta Sulphur Research Ltd.)

and J. Waller, R. Lowther and K. Sunderman (IPAC Chemicals Ltd.)

ASR Quarterly Bulletin

Vol. XXXVII, No. 3, October - December 2000, pp. 16 - 49

Preventing Corrosion in Sulfur Storage Tanks

P.D. Clark, D.R. Hornbaker and T. Willingham

ASR Quarterly Bulletin

Vol. XLV, No. 2, July - September 2008, pp. 1 - 20

The Copper Strip Test: A Review of Existing Procedures for the Assessment  
of the Quality of Propane and LNG

P. D. Clark and K. L. Lesage

ASR Quarterly Bulletin

Vol. XL No. 3, October - December 2003, pp. 1 - 22

Corrosion Testing of Engineering Alloys and Metals in SO<sub>2</sub>/CO<sub>2</sub> Fluids

P. D. Clark, N. I. Dowling, P. M. Davis and C. Lau

ASR Quarterly Bulletin

Vol. XL No. 3, October - December 2003, pp. 23 - 41

Corrosion Pathways in Liquid Sulfur Run-Down Pits and Other Liquid Sulfur Handling Facilities

P.D. Clark, N.I. Dowling

Proceedings Brimstone Sulfur Symposium, Vail, Colorado, September 14-18, 2009.