



December 18, 2024

EDUCATION

**PH.D. METALLURGICAL
ENGINEERING, UNIVERSITY OF
UTAH, COLLEGE OF MINES
AND EARTH SCIENCES, SALT
LAKE CITY, UT, 84112, JUNE
1994**

**M.S. MINING AND
MINERALS ENGINEERING,
VIRGINIA POLYTECHNIC
INSTITUTE AND STATE
UNIVERSITY, BLACKSBURG,
VA, 24061, SEPTEMBER
1987**

**B.S. MINERAL PROCESSING
ENGINEERING, MONTANA
COLLEGE OF MINERAL
SCIENCE AND TECHNOLOGY,
BUTTE, MT, 59701, MAY
1984**

REGISTRATION

**REGISTERED MEMBER (RM)
SME – SOCIETY OF MINING,
METALLURGY AND
EXPLORATION, 2021**

AREAS OF EXPERTISE

- **PROCESS ENGINEERING**
- **MINERAL SEPARATIONS**
- **FLOTATION**
- **EXTRACTIVE METALLURGY**
- **HYDROMETALLURGY**
- **MINING SUSTAINABILITY**
- **REMEDIATION**
- **WASTE MINIMIZATION**
- **RECYCLING**
- **SURFACE CHEMISTRY**
- **ELECTROCHEMISTRY**
- **CHARACTERIZATION**
- **ANALYSIS/SPECTROSCOPY**
- **CRITICAL MINERALS**

DR. COURTNEY YOUNG IS A GRADUATE OF THREE PREMIERE MINERAL/COAL PROCESSING AND EXTRACTIVE METALLURGY INSTITUTIONS. HIS SPECIALTIES IN MINERAL PROCESSING AND EXTRACTIVE METALLURGY INCLUDE MINERAL CHARACTERIZATION AND ANALYSIS, FLOTATION, PHYSICAL SEPARATIONS, LEACHING, CYANIDE, URANIUM, BASE AND PRECIOUS METAL PROCESSING, AND ADSORPTION. HE ENJOYS APPLYING THOSE TECHNOLOGIES TO SECONDARY RESOURCE RECOVERY, CRITICAL MATERIALS, MINING SUSTAINABILITY INCLUDING WASTE PROCESSING, WATER REMEDIATION, TAILINGS AND SLAGS RECYCLING, DUST AND SPENT POT-LINER TREATMENT, ENERGY REDUCTION, AND FLOWSHEET DEVELOPMENT.

WHILE A FACULTY MEMBER FOR JUST OVER 32 YEARS, COURTNEY HAS TAUGHT NUMEROUS COURSES BUT THE LATEST INCLUDE INTRODUCTION TO MINERAL PROCESSING, HYDROMETALLURGY AND AQUEOUS PROCESSING, FIRE ASSAY, MATERIALS HANDLING DESIGN, FLOTATION, ENERGY RESOURCES (MOSTLY COAL AND URANIUM), PRECIOUS METAL RESOURCES (MOSTLY GOLD), INTERNSHIP AND SEMINAR. DURING THIS TIME, DR. YOUNG HAS WORKED ON NUMEROUS RESEARCH AND CONSULTING PROJECTS WITH VARIOUS FUNDING SOURCES, PARTICULARLY MINING COMPANIES AND OFTEN IN COLLABORATION WITH THE CENTER FOR ADVANCED MINERAL, METAL AND MATERIALS PROCESSING (CAMP).

PROFESSIONAL EXPERIENCE

2001-PRESENT TENURED PROFESSOR, M&ME, MONTANA TECH, BUTTE, MT
1998-2019 DEPARTMENT HEAD, M&ME, MONTANA TECH, BUTTE, MT
1996-2001 ASSOCIATE PROFESSOR, M&ME, MONTANA TECH, BUTTE, MT
1995-1996 ASSISTANT PROFESSOR, M&ME, MONTANA TECH, BUTTE, MT
1994 RESEARCH ASST PROFESSOR AND CAMP POSTDOC, MONTANA TECH, BUTTE, MT
1993 RESEARCH FELLOW AND POSTDOC, MINE WASTE TECHNOLOGY PROGRAM (MWTP), MONTANA TECH, BUTTE, MT

PROFESSIONAL AFFILIATIONS

1999-PRESENT AMERICAN EXPLORATION AND MINING ASSOCIATION (AEMA), TRUSTEE
2015-2018
1998-PRESENT MONTANA MINING ASSOCIATION (MMA), HONORARY LIFETIME MEMBER SINCE 2007
1982-PRESENT SOCIETY FOR MINING, METALLURGY AND EXPLORATION (SME), DISTINGUISHED MEMBER SINCE 2017, BOARD OF DIRECTORS MEMBER, 2024-2027

PROFESSIONAL RECOGNITION

PATENTS

20110259148 (USA), AU2011201892 (AUSTRALIA), AND CA2738382 (CANADA), METHOD FOR AQUEOUS GOLD THIOSULFATE EXTRACTION USING COPPER-CYANIDE PRETREATED CARBON ADSORPTION, WITH M. MELASHVILI AND R.N. GOW, 2011.
20170145527 (USA), SYSTEM AND METHOD FOR FORMING SPHERICAL SILICA-BASED PROPPANT AND PIG IRON UTILIZING MINING SLAG, R. TABISH, D.A. TABISH AND L. McNAMARA, 2017.
20240123480 (USA), CHEMICAL LIBERATION OF WASTE PRINTED CIRCUIT BOARDS, WITH B. SUSLAVICH AND A. DAS, 2024.

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18/900,454 (USA APPLICATION), METHOD FOR RECOVERING METALS FROM METAL ALLOYS AND INTERMETALLICS AND 63/541,076 (USA PROVISIONAL APPLICATION), METHODS FOR RECOVERING METALS FROM METAL ALLOYS AND COMPOUNDS WHERE ONE OF THE METALS IS LESS NOBLE THAN THE OTHERS.
A METHOD FOR THE FLOTATION OF RARE EARTH MINERALS AND COMPOUNDS, 2024 (RECENTLY SUBMITTED).

AWARDS (LAST 7)

BEST MPD PRESENTATION AT ANNUAL MEETING, SME, 2023.
ANTOINE M. GAUDIN AWARD, SME, 2020.
ROSE AND ANNA BUSCH FACULTY ACHIEVEMENT AWARD, MONTANA TECH, BUTTE, MT, 2019.
SME FELLOW AWARD, SME, FEBRUARY 22, 2017.
LIFETIME DISTINGUISHED RESEARCHER AWARD, MONTANA TECH, BUTTE, MT, 2016.
MINERAL INDUSTRY EDUCATOR AWARD, AIME, 2016.
PRESIDENT'S CITATION, SME, 2015.

HONORS (LAST 7)

BLM MINERAL SPECIALIST, INAUGURAL PRESENTER CRITICAL MINERALS LECTURE SERIES, NOVEMBER 18, 2024.
SME BOARD OF DIRECTORS, NOMINATED FEB 2022 AND CONFIRMED FEB 2023 TO SERVE FEB 2024-FEB 2027.
PLANNING COMMITTEE, INTERNATIONAL MINERAL PROCESSING CONGRESS (IMPC), WASHINGTON DC, SEPT 29-OCT 3, 2024, SME LEAD ON INNOVATION, RESEARCH AND DEVELOPMENT, FEBRUARY 2023-2024.
HONORARY ORGANIZER, INTERNATIONAL CONGRESS OF MINERAL FLOTATION, LIMA, PERU, NOVEMBER 9-11, 2022.
REGISTERED MEMBER (RM), SME, 2021-PRESENT.
COMMITTEE TO WRITE THE ARGUMENT FOR REJECTION OF I-186, STATE OF MONTANA, JULY-AUGUST 2018.
BEST PRESENTATION, TOP 20, AT MOLTEN '16 - 10TH INTERNATIONAL CONFERENCE ON MOLTEN SLAGS, FLUXES AND SALTS, IN SEATTLE WA, "CHARACTERIZATION AND RECOVERY OF VALUABLES FROM WASTE COPPER SMELTING SLAG," P. SARFO, J. YOUNG, G. WYSS AND G. MA, 2016.

PLENARY AND KEYNOTE PRESENTATIONS (LAST 5)

UPPER PENINSULA SME ANNUAL MEETING, HOUGHTON MI, "PROCESSING CRITICAL MINERALS: APPLICATIONS TO CU AND REES," OCTOBER 24, 2024.
CONGRESSO BRASILEIRO DE FOSFATOS, "ADDRESSING CRITICAL MATERIALS: PROCESSING DOMESTIC CU AND RECYCLING RE MAGNETS," CALDOS NOVAS, GOAIS, BRAZIL, MARCH 7, 2024.
FLOTATION 2022, LIMA, PERU, "MECHANISM OF ORFOM D8 DEPRESSION IN CU-MO SEPARATION," NOVEMBER 9, 2022.
SAIMM MEETING, U OF PRETORIA, PLENARY, "SPECTROELECTROCHEMISTRY OF ENARGITE IN ACIDIC AND ALKALINE SOLUTIONS," AND "MINERAL PROCESSING OF SECONDARY RESOURCES FOR MAKING SIMULANT," JUNE 25, 2015.
XXII INTERNATIONAL CONGRESS IN EXTRACTIVE METALLURGY AND MINERAL PROCESSING, PLENARY, "COMPARISON OF GOLD CYANIDE ADSORPTION ON AC TO GOLD THIOSULFATE ADSORPTION ON IMPREGNATED AC," MAZATLAN, MEXICO, APRIL 16-19, 2015.

INVITED PRESENTATIONS (LAST 4)

HENRY KRUMB LECTURES. GAVE PRESENTATIONS FACE-TO-FACE AT MS&T, ROLLA, MO (10/7/21), MONTANA SME LOCAL SECTION (10/19/22), FLOTATION 2022, LIMA, PERU (11/9/22), CONGRESSO BRASILEIRO DE FOSFATOS (MARCH 7, 2024), AND UPPER PENINSULA SME, HOUGHTON MI (10/24/24) AS WELL AS VIRTUALLY AT PENNSTATE, PA (4/22/21), SDSM&T, SD (9/22/21), FEDERAL U OF CATALÃO, BRAZIL (9/29/21), WSU, WA (9/16/22).
SDSM&T, "MINERALS ARE MATERIALS TOO," SUMMER UNDERGRADUATE RESEARCH PROGRAM, SEPTEMBER 22, 2021.
UNR MINING/METALLURGICAL ENGINEERING, "INDUSTRIAL OUTREACH AND RESEARCH FOR MINING SUSTAINABILITY," SEMINAR, MARCH 3, 2017.
TECHNOLOGICAL INSTITUTE OF SALTILLO, "MINERAL PROCESSING AND EXTRACTIVE METALLURGY APPLICATIONS – TAILINGS RECYCLING AND ARD REMEDIATION," MAZATLAN, MEXICO, APRIL 20, 2015.

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RESEARCH INTERESTS

AS AN ACCOMPLISHED RESEARCHER, DR. COURTNEY YOUNG HAS BEEN RECOGNIZED WITH SME'S ANTOINE M. GAUDIN AWARD IN 2020 AS WELL AS MONTANA TECH'S LIFETIME DISTINGUISHED RESEARCHER AWARD IN 2016 AND RESEARCH AWARD IN 2009. MOST OF DR. YOUNG'S RESEARCH INVOLVES MINERAL PROCESSING AND EXTRACTIVE METALLURGY AND THEIR APPLICATION TO SECONDARY RESOURCE RECOVERY, CRITICAL MATERIALS, AND MINING SUSTAINABILITY ISSUES. CONSEQUENTLY, HIS RESEARCH HAS BEEN VARIED. EXAMPLE RESEARCH EFFORTS INCLUDE BUT ARE NOT LIMITED TO IMPROVING AU RECOVERY, REMEDIATING CYANIDE, SELECTING UNIT OPERATIONS AND TESTING ORES, RECYCLING SPENT POT-LINER, MAKING SYNTHETIC LUNAR SOIL, REPURPOSING SLAGS AND TAILS, TREATING ACID-ROCK DRAINAGE, DETERMINING DEPRESSANT ACTION IN CU-MO FLOTATION, CONDUCTING CU ELECTROWINNING FOR ENERGY SAVINGS, MODELLING FLOTATION, EXAMINING NOVEL COLLECTORS IN REE FLOTATION, RECOVERING VALUABLES FROM SLAGS AND TAILS (PGMs, CU, GARNET, ETC.), MAKING PIG FE FROM SLAG, DESIGNING FLOWSHEETS, PRECIPITATING NANO-AU, RECYCLING PLASTICS BY SURFACE MODIFICATION AND FLOTATION, MANUFACTURING TiO₂ NANO-PARTICLES FOR PHOTOCATALYTIC WATER REMEDIATION, AND UNDERSTANDING SURFACE REACTIONS OF SULFIDE MINERALS IN FLOTATION AS WELL AS LEACHING.

GRANTS AND CONTRACTS

FEDERAL PROGRAMS (LAST 4)

1. ARMY RESEARCH LAB (WITH RONALD WHITE/CAMP AS PI), "ADVANCED PROCESSING OF REE FROM ORES, RECYCLABLES AND COAL/BY-PRODUCTS," YEARS 1-3, \$1,800,000 (2022-24).
2. ARMY RESEARCH LAB (WITH RONALD WHITE/CAMP AS PI), "ADVANCED PROCESSING OF REE NATURAL RESOURCES," YEAR 1 (2015), YEAR 2 (2016), YEAR 3 (2017) AND YEARS 4/5, \$1,250,000 (2018-19).
3. ARMY RESEARCH LAB (WITH RONALD WHITE/CAMP AS PI), "RARE EARTH PROCESSING BY FLOTATION USING NOVEL COLLECTORS AND OTHER REAGENTS," U OF ALABAMA-BIRMINGHAM, \$450,000 (2014-2015).
4. OFFICE OF NAVAL RESEARCH, "REE SELECTIVE PROCESSING BY LEACHING AND CHELATING SPCs," \$300,000 (2012-2016).

STATE/INSTITUTIONAL PROGRAMS (LAST 4)

1. HOST TO DR. KAZUTOSHI HAGA, AKITA UNIVERSITY, JAPAN, OVERSEAS TRANSFER PROGRAM, \$10,000 (SEPTEMBER – OCTOBER, 2022) AND \$15,000 (SEPTEMBER – NOVEMBER, 2023).
2. HOST TO DR. SENGASITH HOUNGALOUNE, FULLBRIGHT SCHOLAR, NATIONAL UNIVERSITY OF LAOS, VIENTIANE CAPITAL, LAOS, \$20,000 (SEPTEMBER 2018 – DECEMBER 2018).
3. HOST TO DR. IYIOLA "TUNJI" OTUNNIYI, SABBATICAL, VAAL UNIVERSITY, VANDERBIJLPARK, S. AFRICA, "FUNDAMENTAL UNDERSTANDING OF PENTLANDITE-PYRRHOTITE FLOTATION," \$10,000 (MARCH 2018 – JUNE 2018).
4. HOST TO DR. YASUSHI TAKASAKI, AKITA UNIVERSITY, JAPAN, OVERSEAS TRANSFER PROGRAM, \$10,000 (JUNE 2016 – AUGUST 2016).

INDUSTRIAL PROGRAMS (LAST 15)

1. CONTACT MINING COMPANY, "TUNGSTEN RECOVERY PROJECT," TBD, 2024-PRESENT.
2. CHEVRON-PHILLIPS CHEMICAL, "CONFIRMATION OF ORFOM D8 MECHANISM, PHASE IV," \$154,000, 2023-2025.
3. DISA, "NOVEL ABLATION PROCESS FOR INCREASED RECOVERY OF TAILINGS," \$40,000, 2021-2023.
4. CLARIANT, "CHARACTERIZATION OF FROTHERS USING ERT AND COLUMN FLOTATION," \$30,000 (2020-2021).
5. INTEGRATED RECYCLING TECHNOLOGIES, WITH A. DAS AS CO-PI, "PCB RECYCLING," \$150,000, 2018-2020.
6. UTRS, "RECYCLING OF SLAG FROM PROPRIETARY PROCESS," \$22,110, 2018.
7. BARRICK GOLDEN SUNLIGHT, "RECOVERING CU FROM SLAG VIA MATTE-PHASE REACTIONS," \$16,000, 2017-2018.
8. STILLWATER MINING CORP., "RECOVERING PT FROM SLAG VIA CARBOTHERMAL REDUCTION," \$16,000, 2017-2018.
9. FX SOLUTIONS, WITH A. DAS AS CO-PI, "RECOVERING GLASS FROM SLAG VIA CARBOTHERMAL REDUCTION," \$180,000 (2019-2020) AND \$210,000 (2017-2018).

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10. AMINPRO, "CROWDING OF BUBBLES IN FROTH FLOTATION, WITH R. LADOUCEUR" SUBAWARD TO FREEPORT-McMoRAN, \$16,000, 2017.
11. GMA MINING, "UTILIZATION OF TAILINGS FROM GARNET PROCESSING PLANT," \$33,130, MARCH-SEPT, 2016.
12. FREEPORT McMoRAN, PROPRIETARY WITH DR. MICHAEL MOATS AT MS&T, \$12,000, MAY-AUGUST, 2015.
13. CLIFFS NATURAL RESOURCES (FORMERLY CLEVELAND CLIFFS), \$15,000, METALLURGICAL & MATERIALS ENGINEERING UNDERGRADUATE RESEARCH, MONTANA TECH FOUNDATION, 2008-2011.
14. BASF, "ENHANCING AU LEACHING KINETICS WITH SURFACTANTS," WITH H.H. HUANG, \$88,000, 2009-2010.
15. NEWMONT, \$460,000, METALLURGICAL & MATERIALS ENGINEERING RESEARCH SUPPORT, 2005-PRESENT.

PUBLICATIONS

PEER-REVIEWED JOURNALS (LAST 15)

1. "REVIEW OF THE MECHANISM FOR ORFOM[®] D8 DEPRESSION OF CHALCOPYRITE IN CU-MO SEPARATION DURING CLEANER FLOTATION," A. DAS, R. LADOUCEUR, S. TIMBILLAH AND S. CHILDRESS, *IJ SOC MAT ENG FOR RES*, 25(1):18-22, 2022.
2. "EFFECT OF FROTHERS ON GAS DISPERSION IN A CAVITATION SPARGER AS DETERMINED WITH ELECTRICAL RESISTANCE TOMOGRAPHY," R. LADOUCEUR AND P. HOLDSWORTH, *MINERALS ENGINEERING*, 160:106655, 2021.
3. "THEORETICAL AND EXPERIMENTAL INVESTIGATION OF THE INTERACTION OF A NOVEL ORGANIC DEPRESSANT, DISODIUM CARBOXYMETHYL TRITHIOCARBONATE, IN CU-MO FLOTATION," S. TIMBILLAH, R. LADOUCEUR AND A. DAS, *MINERALS ENGINEERING*, 169:106943, 2021.
4. "EXTRACTION AND OPTIMIZATION OF NEODYMIUM BY MOLTEN FLUORIDE ELECTROLYSIS," *SEPARATION & PURIFICATION TECH.*, P. SARFO AND A. DAS, 256(7), 117770, 2021.
5. "HYDROMETALLURGICAL RECOVERY AND PROCESS OPTIMIZATION OF RARE EARTH FLUORIDES FROM RECYCLED MAGNETS," P. SARFO, T. FRASZ AND A. DAS, *MINERALS*, 10(4):340-353, 2020.
6. "CHARACTERIZATION AND PROCESSING OF PLANT TAILINGS FOR THE RECOVERY OF FINE GARNET – A CASE STUDY," A. DAS, B. HILL, P. ROSSITER AND G. WYSS, *SEPARATION SCIENCE AND TECHNOLOGY*, 56(2):76-88, 2020.
7. "STUDIES ON THE NATURE OF SALICYLHYDROXAMATE ADSORPTION AT THE SURFACE OF NEODYMIUM OXIDE," M. SIME, A. DAS, G. GALT AND G. HOPE, *J. DISP. SCI & TECH*, 40(10): 1488-1498, 2019.
8. "STABILITY DIAGRAMS FOR COPPER-SULFIDE AND COPPER-RECYCLE SYSTEMS APPLIED TO EXTRACTIVE METALLURGICAL PROCESSES," H.H. HUANG AND L.G. TWIDWELL, *IJ SOC MAT ENG FOR RES*, 23(2):128-136, 2018.
9. "PHENOMENOLOGICAL MODEL OF ENTRAINMENT AND FROTH RECOVERY FOR INTERPRETING LABORATORY FLOTATION KINETIC TESTS, P. AMELUNXEN, R. AMELUNXEN, AND R. LADOUCEUR, *MINERALS ENGINEERING*, 125:60-65, 2018.
10. "CARBOTHERMAL REDUCTION OF COPPER SMELTER SLAG FOR RECYCLING INTO PIG IRON AND GLASS," P. SARFO, G. WYSS, G. MA AND A. DAS, *MINERALS ENGINEERING*, 107:8-19, 2017.
11. "RECOVERY OF METAL VALUES FROM COPPER SLAG AND REUSE OF RESIDUAL SECONDARY SLAG," P. SARFO, A. DAS AND G. WYSS, *WASTE MANAGEMENT*, 70:272-281, 2017.
12. "XANTHATE CHEMISORPTION AT CU AND CU₂S SURFACES," J.L. BOWDEN, *J OF SAIMM*, 116:503-8, 2016.
13. "UTILITY OF MASS-BALANCED E_H-PH DIAGRAMS II – APPLICATIONS OF GIBBS RULE," R.N. GOW AND H. HUANG, *MINER. METALL. PROCESS*, 33(3):107-115, 2016.
14. "UTILITY OF MASS-BALANCED E_H-PH DIAGRAMS I – APPLICATIONS TO CU-AS-S-H₂O SYSTEM," R.N. GOW AND H. HUANG, *MINER. METALL. PROCESS*, 33(2):58-67, 2016.
15. "SPECTROELECTROCHEMISTRY OF ENARGITE III: REACTIVITY IN ALKALINE SULFIDE SOLUTIONS," R.N. GOW, H. HUANG AND G. HOPE, *MINER. METALL. PROCESS*, 32(1):14-21, 2015.

PEER-REVIEWED BOOKS AND PROCEEDINGS (LAST 15)

1. "PRELIMINARY INVESTIGATION OF A NOVEL PROCESS FOR RECYCLING SAMARIUM-COBALT MAGNETS BY SELECTIVE OXIDATION," M. HARVEY AND M. CACCIA, IMPC 2024, WASHINGTON DC, SEPT 30-OCT 1, 2024.
2. "FUNDAMENTALS OF RARE EARTH MINERAL FLOTATION – UNDERSTANDING SILICATES TO INCREASE METALLURGICAL

- PERFORMANCE," A.W. MAMUDU, V. VILAYPHONE, AND T. BAYLESS, IMPC 2024, WASHINGTON DC, SEPT 30-OCT 1, 2024.
3. "SURFACE CHEMISTRY OF DISODIUM CARBOXYMETHYL TRITHIOCARBONATE (ORFOM[®] D8) FOR DEPRESSING CU IN CHALCOPYRITE-MOLYBDENITE SEPARATION," P.J. MENSAH AND T. BAYLESS, IMPC 2024, WASHINGTON DC, SEPT 30-OCT 1, 2024.
 4. "SYNTHESIS AND CHARACTERIZATION OF THE HYDROXAMIC ACID N,3-DIHYDROXY-2-NAPHTHAMIDE AND ITS COPPER (II) COMPLEX – AN INVESTIGATION ON KETO/ENOL FORMS AND RARE EARTH FLOTATION," B. SUSLAVICH, R. LADOUCEUR, A.W. MAMUDU, *MINERALS AND MINERAL MATERIALS*, 3:1, 2024.
 5. "CHAPTER 4: FLOTATION PRINCIPLES AND KINETICS - APPLICATION OF NOVEL DEPRESSANTS TO RARE EARTH MINERALS," ACCEPTED IN Y. MURTY, M. ALVIN AND J. LIFTON (EDITORS), *RARE EARTH METALS AND MINERALS INDUSTRIES: STATUS AND PROSPECTS*, R. LADOUCEUR AND P. AMELUNXEN, SPRINGER, P. 103-122, PP. 518, 2024.
 6. "ORFOM[®] D8: A VIABLE REPLACEMENT FOR NAHS AS A DEPRESSANT IN THE CHALCOPYRITE-MOLYBDENITE FLOTATION SYSTEM," S. TIMBILLAH, R. LADOUCEUR AND A. DAS, IN: *COPPER 2019*, 10TH COPPER INTERNATIONAL CONFERENCE, VANCOUVER, BC, AUGUST 2019.
 7. "CHAPTER 10.19: AQUEOUS PHASE REDOX PRECIPITATION," H.H. HUANG, *MINERAL PROCESSING AND EXTRACTIVE METALLURGY HANDBOOK*, SME, LITTLETON, CO, 2019.
 8. "CHAPTER 12.13: GRAPHENE," G. WILSON, *MINERAL PROCESSING AND EXTRACTIVE METALLURGY HANDBOOK*, SME, LITTLETON, CO, 2019.
 9. "CHAPTER 12.33: SILICA, QUARTZ AND SILICON," D.C. LYNCH, *MINERAL PROCESSING AND EXTRACTIVE METALLURGY HANDBOOK*, SME, LITTLETON, CO, 2018.
 10. "CHAPTER 1.1: MINERAL PROPERTIES, CHARACTERIZATION AND PROCESSING." A. DAS, *MINERAL PROCESSING AND EXTRACTIVE METALLURGY HANDBOOK*, SME, LITTLETON, CO, 2018.
 11. "FUNDAMENTAL UNDERSTANDING OF THE FLOTATION CHEMISTRY OF RARE EARTH MINERALS," S. TRANT, G. GALT AND A. DAS, *PROCEEDINGS OF EXTRACTION 2018*, CIM, OTTAWA, ONTARIO, CANADA, AUGUST 26-29, 2018.
 12. "A FUNDAMENTAL STUDY OF DI-SODIUM CARBOXYMETHYL TRITHIOCARBONATE (ORFOM[®] D8) IN FLOTATION SEPARATION OF COPPER-MOLYBDENUM SULFIDES," S. TIMBILLAH AND A. DAS, *PROCEEDINGS OF EXTRACTION 2018*, CIM, OTTAWA, ONTARIO, CANADA, AUGUST 26-29, 2018.
 13. "MODELING AND OPTIMIZATION OF RARE EARTH MINERAL FLOTATION USING SALICYLHYDROXAMIC ACID." R. LADOUCEUR AND P. AMELUNXEN, IN: *XXVIII INTERNATIONAL MINERAL PROCESSING CONGRESS*, CIM, WESTMOUNT, QUEBEC, CANADA, 2016.
 14. "DEVELOPMENT OF A NOVEL TECHNOLOGY TO REDUCE ENERGY CONSUMPTION DURING ELECTROWINNING OF COPPER." A. DAS AND F. DAKUBO, IN: *XXVIII INTERNATIONAL MINERAL PROCESSING CONGRESS*, CIM, WESTMOUNT, QUEBEC, CANADA, 2016.
 15. "CHARACTERIZATION AND RECOVERY OF VALUABLES FROM WASTE COPPER SMELTING SLAG." P. SARFO, J. YOUNG AND G. MA, *PROCEEDINGS OF 10TH INTERNATIONAL CONF. ON MOLTEN SLAGS, FLUXES AND SALTS*, PP. 889-898. 2016.

PRESENTATIONS (LAST 15 NOT ASSOCIATED WITH PROCEEDINGS)

1. "REVIEW OF ABET CRITERIA FOR MINERAL PROCESSING ENGINEERING OR SIMILARLY-NAMED PROGRAMS," IMPC 2024, WITH MICHAEL MOATS, WASHINGTON DC, SEPT 30-OCT 3, 2024.
2. "RARE-EARTH MINERALS – WHERE FLOTATION IS HEADED," CONGRESSO BRASILEIRO DE FOSFATOS, MARCH 7, 2024.
3. "SELECTIVE OXIDATIVE ROASTING FOR RECYCLING RARE EARTH MAGNETS," CONGRESSO BRASILEIRO DE FOSFATOS, MARCH 8, 2024.
4. "DETAILED SYNOPSIS OF THE FIRE ASSAY SHORT COURSE: HISTORY, FUNDAMENTALS, AND APPLICATION," WITH CORBY ANDERSON, IPMI SAMPLING AND ANALYSIS SYMPOSIUM III, GOLDEN CO, OCT 16, 2023.
5. "EFFECT OF MINERAL TYPE ON THE FLOTATION OF REEs," A. DAS, *FLOTATION 2022*, LIMA, PERU, NOV 9-11, 2022.
6. "VERIFICATION OF 3-ZONE MODEL FOR FLOTATION – AN APPLICATION TO COLUMN CELLS," RICK LADOUCEUR AND PHIL HOLDSWORTH, *FLOTATION 2022*, LIMA, PERU, NOV 9-11, 2022.

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7. HENRY KRUMB LECTURES. GAVE IN-PERSON PRESENTATIONS AT MT TECH (9/1/21 AND 9/2/22), MS&T (10/7/21), MONTANA SME LOCAL SECTION (10/19/22) AS WELL AS VIRTUAL PRESENTATIONS AT SME (3/10/21), PENNSTATE (4/22/21), SDSM&T (9/22/21), BRAZIL (9/29/21), CHINA (10/14/21), AKITA JAPAN CONFERENCE (10/20/21), ORFOM D8 CONFERENCE/CHEVRON-PHILLIPS (11/9/21), PERU (11/9/22) AND WSU (9/16/22).
8. "LOADING THE BASES WITH STUDENTS – HITTING GRAND SLAMS WITH INDUSTRY," 2020 GAUDIN AWARD LECTURE, VIRTUAL PRESENTATION AT SME ANNUAL MEETING, DENVER CO, 2021.
9. "CHALCOPYRITE DEPRESSION WITH ORFOM[®] D8 DURING CLEANER FLOTATION OF CU-MO BULK CONCENTRATE: THEORY AND PRACTICE," SME ANNUAL MEETING, PHOENIX AZ, 2020 (ELECTED AS SME HENRY KRUMB LECTURE).
10. "EFFECT OF FROTHERS ON GAS DISPERSION IN A CAVITATION SPARGER AS DETERMINED WITH ELECTRICAL RESISTANCE TOMOGRAPHY," R. LADOUCEUR AND P. HOLDSWORTH, FLOTATION '19, CAPE TOWN, S. AFRICA, NOV 11-14 2019.
11. "THE PROCESSING AND RECYCLING OF GARNET TAILINGS FOR RECOVERY AND MASS REDUCTION PURPOSES," A. DAS, G. WYSS, M. EGLOFF AND P. ROSSITER, AEMA ANNUAL MEETING, RENO NV, DEC 1-6, 2019.
12. "REPURPOSING TAILINGS FOR ADDED VALUE," A. DAS, G. WYSS, M. EGLOFF AND P. ROSSITER, MINING AND MINERAL SYMPOSIUM, MBMG, MONTANA TECH, BUTTE MT, OCT 9-11, 2019.
13. "CHEMISTRY OF RARE EARTH MINERAL FLOTATION WITH SALICYL HYDROXAMIC ACID," A. DAS, M. SIME AND S. TRANT, SME ANNUAL MEETING, DENVER CO, FEBRUARY 24-27, 2019.
14. "CONSIDERATION AND CONSTRUCTION OF POTENTIAL- PO_2^- DIAGRAM WITH EMPHASIS ON MOLTEN SALT ELECTROLYSIS OF NEODYMIUM FROM ITS OXIDE," P. SARFO AND H.H. HUANG, 233RD ANNUAL MEETING OF ELECTROCHEMICAL SOCIETY, SEATTLE WA, MAY 13-17, 2018.
15. "PHENOMENOLOGICAL MODEL OF ENTRAINMENT AND FROTH RECOVERY FOR INTERPRETING LABORATORY FLOTATION KINETIC TESTS, P. AMELUNXEN, R. AMELUNXEN, AND R. LADOUCEUR, *MEI FLOTATION '17*, CAPE TOWN, S. AFRICA, NOVEMBER 13-16, 2017.

STUDENT ADVISEES

PH.D. STUDENTS – 1 CURRENT AND 6 GRADUATES

M.S. THESIS STUDENTS – 8 CURRENT AND 31 GRADUATES

M.S. NON-THESIS STUDENTS – 1 CURRENT AND 8 GRADUATES

B.S. UNDERGRADUATE RESEARCH STUDENTS – 5 CURRENT AND 92 GRADUATES

SERVICE – ACADEMIC, PROFESSIONAL AND COMMUNITY

ADVISEE LETTERS – 44 AWARDEES

DEPARTMENT AND CAMPUS – 55 COMMITTEES INCLUDING DEPARTMENT HEAD FOR 19 YEARS

CHAIRS AND VICE-CHAIRS – 27 POSITIONS

COMMITTEES – 33 AWARD COMMITTEES INCLUDING SME BOARD OF DIRECTORS (2024-2027)

CONFERENCES, SYMPOSIA AND PROGRAMS – 23 PROFESSIONAL MEETINGS

SESSION CHAIRS – 48 SESSIONS WITH THE LAST AT IMPC 2024

PEER-REVIEWS – 9 BOOKS/PROCEEDINGS, 4 JOURNALS, 245 PUBLICATIONS, 79 PROPOSALS, AND 12 ABROAD THESES

SHORT COURSES – PRINCIPLES OF MINERAL AND METALLURGICAL PROCESSING AND FUNDAMENTALS OF FIRE ASSAY

COMMUNITY SERVICE – 15 WITH LATEST CURRENT ACTIVITY INCLUDING BUTTE NATURAL RESOURCE COUNCIL