

Ir. Rivaldi Sidabutar, S.T., M.T

Lecturer of Undergraduate Program in Chemical Engineering Study Program
Faculty of Engineering
Universitas Sumatera Utara

✉ rivaldi@usu.ac.id

🌐 ft.usu.ac.id/en/lecturer/rivaldi-sidabutar

Rivaldi Sidabutar, S.T., M.T. was born in Sibolga on July 27, 1996. Currently, he is a Chemical Engineering lecturer at the Universitas Sumatera Utara. He completed his master's degree in Chemical Engineering at the Universitas Sumatera Utara in 2020.

Publications

2023

Jurnal nasional terakreditasi

Pengaruh Laju Alir Biogas dan Ukuran Partikel Pembentuk Pelet terhadap Penyisihan Karbon Dioksida (CO₂) dalam Biogas dengan Proses Adsorpsi - Desorpsi Menggunakan Adsorben Berbasis Zeolit Alam untuk Peningkatan Kualitas Biogas

RIVALDI SIDABUTAR , IRVAN , BAMBANG TRISAKTI

2018

Jurnal internasional

ADSORPTION - DESORPTION SYSTEM FOR CO₂ REMOVAL IN BIOGAS USING NATURAL ZEOLITE - BASED ADSORBENT

IRVAN , RIVALDI SIDABUTAR , DR IRIANY, IR, MSC , SERI MAULINA , BAMBANG TRISAKTI

2024

Jurnal internasional bereputasi

Towards low-cost and sustainable biochar production based on empty fruit bunch: Effect of pelletization, microwave power, residence time, and mass on biochar quality for commercial approach

BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN

2025

Jurnal nasional terakreditasi

Pemberdayaan Masyarakat Desa Tadukan Raga melalui Budidaya Jamur Merang dan Maggot BSF untuk Pengolahan Limbah Perkebunan Bernilai

RIVALDI SIDABUTAR , ILHAM PERKASA BAKO , MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHE

2024

Prosiding seminar internasional

Removal of H₂S from Rich Solution in Absorption Process by Utilizing Thiobacillus.sp

IRVAN , BAMBANG TRISAKTI , RIVALDI SIDABUTAR

2024

Jurnal internasional bereputasi

Biogas upgrading via CO₂ absorption using monosodium glutamate-promoted potassium carbonate in packed absorption column: Design and performance assessment

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN

2025

Prosiding seminar internasional

Utilization of kepok banana starch bioplastic spoons: effects of areca nut peel

cellulose and glycerol additions

NISAUL FADILAH DALIMUNTHE , MUHAMMAD THORIQ AL FATH. , RIVALDI SIDABUTAR

2020

Prosiding seminar internasional

Effect of sulphuric acid (H₂SO₄) and sodium hydroxide (NaOH) addition to prevent silica scaling in geothermal power plant projection pipes at PLTP X

BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN

2025

Jurnal nasional terakreditasi

Pemberdayaan Masyarakat Desa Tadukan Raga melalui Budidaya Jamur Merang dan Maggot BSF untuk Pengolahan Limbah Perkebunan Bernilai

ILHAM PERKASA BAKO , RIVALDI SIDABUTAR , MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHE , LUKE GILBERT BUYSANG , RADIA VELLA , VANNESS

2024

Jurnal internasional bereputasi

Treatment of effluent from the upflow anaerobic sludge blanket-hollow centered packed bed fermentor by utilizing *Chlorella vulgaris* in a fed-batch system

BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN

2024

Jurnal internasional bereputasi

Synergistic integration of zeolite engineering and fixed-bed column design for enhanced biogas upgrading: Adsorbent synthesis, CO₂/CH₄ separation kinetics, and regeneration ...

NISAUL FADILAH DALIMUNTHE , RIVALDI SIDABUTAR , MUHAMMAD THORIQ AL FATH.

2025

Jurnal internasional bereputasi

Development of a novel co-composting system for empty fruit bunches using UASB-HCPB fermentor-derived effluent for sustainable palm oil waste management: Design, performance evaluation, and kinetic study

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHE

2025

Jurnal nasional terakreditasi

ECO-WAVE MAG: Inovasi Teknologi Pengeringan Maggot Berbasis Circular Economy pada Mitra (Black Soldier Fly) BSF Ratna Medan

RIVALDI SIDABUTAR

2025

Jurnal internasional bereputasi

The effect of turning frequency on the compost dynamics and quality derived from empty fruit bunches, *Azolla microphylla*, and active organic fertilizer

RIVALDI SIDABUTAR , MUHAMMAD THORIQ AL FATH. , BAMBANG TRISAKTI , IRVAN , NISAUL FADILAH DALIMUNTHE

2025

Jurnal nasional terakreditasi

Pemberdayaan Masyarakat Desa Tadukan Raga melalui Budidaya Jamur Merang dan Maggot BSF untuk Pengolahan Limbah Perkebunan Bernilai

RIVALDI SIDABUTAR , MUHAMMAD THORIQ AL FATH. , ILHAM PERKASA BAKO , NISAUL FADILAH DALIMUNTHE

2023

Jurnal nasional

Hexagonal Rotary Dryer Untuk Peningkatan Efisiensi Pengeringan Biji Kopi Di Desa Sempajaya, Kecamatan Berastagi, Kabupaten Karo

RIVALDI SIDABUTAR , RONDANG TAMBUN , MUHAMMAD THORIQ AL FATH. , DR IRIANY, IR, MSC , DR.TASLIM, IR, MSC

2020

Prosiding seminar internasional

Effect of Recycle Ratio on Methanogenesis Anaerobic Digestion of Palm Oil Mill Effluent (POME) in a Stirred Tank Reactor Assisted by Ultrafiltration

Membrane into Biogas in Transition Conditions

AMIR HUSIN , BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN

2026

Jurnal internasional bereputasi

Zeolite pellet fabrication for biogas purification: Characterization and CO₂ adsorption performance

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , FARIDA HANUM

2024

Jurnal nasional terakreditasi

Karakteristik Sifat Fisik Membran Elektrolit Polimer Berbasis Kitosan Larva Black Soldier Fly/Polivinil Alkohol/Poliakrilonitril dengan Penambahan Ammonium Klorida

MUHAMMAD THORIQ AL FATH. , RIVALDI SIDABUTAR , NISAUL FADILAH DALIMUNTHE

2025

Jurnal nasional terakreditasi

Pembuatan Bahan Bakar Alternatif dari Sampah Sayuran Hasil Pertanian menggunakan Alat Distilator di Desa Sampajaya, Kecamatan Berastagi, Kabupaten Karo.

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , MUHAMMAD THORIQ AL FATH. , MUHAMMAD HENDRA S GINTING , FARIDA HANUM , DR.TASLIM, IR, MSC

2025

Jurnal internasional bereputasi

Enhancing biochar-assisted co-digestion of food waste and sewage sludge using cow dung as methanogenic bacteria inoculum: Effect of biochar incorporation

RIVALDI SIDABUTAR , IRVAN , MAYA SARAH , BAMBANG TRISAKTI

2024

Jurnal internasional bereputasi

Pectin-carbonate hydroxyapatite composite films as a potential drug delivery system for cinnamaldehyde: Characterization and release kinetics modeling

RIVALDI SIDABUTAR , NISAUL FADILAH DALIMUNTHE , SANG KOMPIANG WIRAWAN , MUHAMMAD THORIQ AL FATH.

2025

Jurnal internasional bereputasi

Microalgae for sustainable biodiesel and omega-3: A comprehensive review of production, processing, and implementation

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHE

2024

Prosiding seminar internasional

Design and fabrication of UASB-HCPB reactor assisted UF membrane for POME treatment to produce biogas

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN

2020

Prosiding seminar internasional

Comparison of mass balance and oil quality in plant refinery I and IV

BAMBANG TRISAKTI , IRVAN , RIVALDI SIDABUTAR

2024

Prosiding seminar internasional

Effect of Cutting Size in the Composting Process of Oil Palm Empty Fruit Branches (EFB) Using Active Organic Liquid Fertilizer (AOLF) as Co-Composting

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN

2026

Jurnal internasional bereputasi

Zeolite pellet fabrication for biogas purification: Characterization and CO₂ adsorption performance

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , FARIDA HANUM

2020

Prosiding seminar internasional

Combination of CSTR and membrane process in treating palm oil mill effluent (POME)

BAMBANG TRISAKTI , IRVAN , RIVALDI SIDABUTAR

2025

Jurnal internasional bereputasi

Bioreactor design for acidogenesis process of palm oil mill effluent

MAYA SARAH , RIVALDI SIDABUTAR , IRVAN , BAMBANG TRISAKTI , RONDANG TAMBUN

2024

Jurnal nasional terakreditasi

Development of Biogas Plant and Mushrooms Grumpy in a Biomass Waste Utilization Facility at Tadukan Raga Village, STM Hilir District, Deli Serdang Regency

BAMBANG TRISAKTI , RIVALDI SIDABUTAR

2024

Jurnal nasional terakreditasi

Strengthening and Empowering of Community Observer and User of Biomass Waste Utilization Facility in Tadukan Raga Village, Deli Serdang Regency

RIVALDI SIDABUTAR , IRVAN , BAMBANG TRISAKTI , MUHAMMAD THORIQ AL FATH. , INDRA SURYA , MERSI SURIANI SINAGA , FATIMAH

2024

Jurnal internasional bereputasi

Synergistic integration of zeolite engineering and fixed-bed column design for enhanced biogas upgrading: Adsorbent synthesis, CO₂/CH₄ separation kinetics, and regeneration assessment

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHE

2023

Jurnal nasional

Pemberdayaan Masyarakat Melalui Budidaya Maggot Dengan Sisa Sampah Organik Sebagai Alternatif Pakan Ikan Di Desa Sempajaya, Kecamatan Berastagi, Kabupaten Karo

SHEYLIN WIMORA LUMBAN TOBING , MERSI SURIANI SINAGA , MUHAMMAD HENDRA S GINTING , RIVALDI SIDABUTAR

2025

Jurnal internasional bereputasi

Enhanced H₂S absorption and water recovery using Thiobacillus sp. and Azolla microphylla for zero-waste palm oil mill applications

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN

2024

Jurnal internasional bereputasi

Pectin-carbonate hydroxyapatite composite films as a potential drug delivery system for cinnamaldehyde: Characterization and release kinetics modeling

MICHAEL , NISAUL FADILAH DALIMUNTHE , MUHAMMAD THORIQ AL FATH. , THIODORUS MARVIN TJANDRA , RIVALDI SIDABUTAR , SANG KOMPIANG WIRAWAN

2024

Jurnal nasional terakreditasi

Pengurangan Nilai COD pada Effluent Fermentor Biogas UASB-HCPB dengan Memanfaatkan Mikroalga Chlorella vulgaris

OKTA BANI , BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN , JUAN AKMAL NASUTION

2025

Jurnal internasional bereputasi

Sustainable lipid production from Chlorella vulgaris USU1 strain using packed absorption column-derived effluent as carbon source for biomass generation

RIVALDI SIDABUTAR , BAMBANG TRISAKTI , IRVAN , MAYA SARAH , FARIDA HANUM , ERMAN MUNIR

2024

Effect of hydraulic retention time and effluent recycle ratio on biogas production from POME using UASB-HCPB fermentor assisted with ultrafiltration membrane at mesophilic condition

BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN

2020

Prosiding seminar internasional

Effect of sulphuric acid (H₂SO₄) and sodium hydroxide (NaOH) addition to prevent silica scaling in geothermal power plant projection pipes at PLTP X

BAMBANG TRISAKTI , RIVALDI SIDABUTAR , IRVAN

Researches

2024

Pembuatan Patch Edible Film Sebagai Sistem Penghantar Obat Jerawat Dengan Penambahan Ekstrak Lidah Buaya (Aloe vera)

MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHER , RIVALDI SIDABUTAR

2023

Penelitian Dana Lokal Perguruan Tinggi

Pengolahan Effluent Fermentor Biogas UASB-HCPB dengan Memanfaatkan Mikroalga Chlorella vulgaris pada Sistem Fed-Batch

BAMBANG TRISAKTI , OKTA BANI , RIVALDI SIDABUTAR , GLORIA CLARITA SINAMO , JOHANNES SIREGAR , JUAN AKMAL NASUTION , RENATA AMBARITA

2023

Upgrading Biogas melalui Absorpsi CO₂ menggunakan K₂CO₃ Berpengaktif Monosodium Glutamat pada Reaktor Packed Column

BAMBANG TRISAKTI , IRVAN , RIVALDI SIDABUTAR

2023

Penelitian Dana Lokal Perguruan Tinggi

FABRIKASI BIOBATERAI DENGAN MEMBRAN ELEKTROLIT POLIMER BERBASIS KITOSAN LARVA BLACK SOLDIER FLY (Hermetia illucens)/PVA/PAN DENGAN PENAMBAHAN AMMONIUM Klorida (NH₄Cl)

MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHER , RIVALDI SIDABUTAR

2022

Penelitian Unggulan Perguruan Tinggi

Integrasi Produksi Biogas Berbasis POME Menggunakan Reaktor UASB-HCPB Kombinasi Membran Ultrafiltrasi dan Upgrading Biogas dengan Teknologi Bioscrubber

BAMBANG TRISAKTI , IRVAN , RIVALDI SIDABUTAR , DEBORA KRISTINA SIMBOLON , JOSUA F MANURUNG , RAISSA PASSA

2025

Penelitian Dana Lokal Perguruan Tinggi

PERANCANGAN DAN UJI KINERJA PACKED ABSORPTION COLUMN DALAM PROSES ABSORPSI CO₂ PADA BIOGAS BERBASIS PALM OIL MILL EFFLUENT (POME) MENGGUNAKAN PELARUT K₂CO₃ BERPENGAKTIF GLISIN

SHEYLIN WIMORA LUMBAN TOBING , DR.TASLIM, IR, MSC , RIVALDI SIDABUTAR

2025

Penelitian Dana Lokal Perguruan Tinggi

Potensi Produksi Biodiesel dari Minyak Hasil Ekstraksi Mikroalga Chlorella vulgaris Berbantuan Gelombang Mikro (Microwave- Assisted Extraction) untuk Mendukung Ketahanan Energi Nasional

DR.TASLIM, IR, MSC , FARIDA HANUM , RIVALDI SIDABUTAR

2024

Kerjasama Luar Negeri dan Publikasi Internasional

Solusi Gas Berkelanjutan: Inovasi dalam Produksi Biogas dan Proses

Pemurnian Biometana

FATIMAH , FARIDA HANUM , MAYA SARAH , RIVALDI SIDABUTAR , DOLY RIDZKI PANGARIBUAN , ANNISA NURUL IZZA

2024

Penelitian Fundamental

Pengembangan Prototipe Komposter Silinder Tandan Kosong Kelapa Sawit (TKKS) menggunakan Pupuk Cair Organik Aktif (PCOA) sebagai Co-Composting untuk Menghasilkan Kompos Komersil

BAMBANG TRISAKTI , IRVAN , RIVALDI SIDABUTAR

2022

Penelitian Dosen Pemula

Recycle Absorben melalui Degradasi CO2 dari Rich Solution dengan Memanfaatkan Chlorella vulgaris

BAMBANG TRISAKTI , OKTA BANI , RIVALDI SIDABUTAR , MUHAMMAD RIZKY ANSHARI GIRSANG , OSAMA HARAHAP , MUHAMMAD RIZKY PULUNGAN

Community Services

2024

Pemberdayaan Masyarakat dalam Integrasi Pengolahan Limbah Perkebunan Menjadi Produk Bernilai Melalui Budidaya Jamur Merang dan Maggot BSF di Desa Tadukan Raga Kabupaten Deli Serdang

MUHAMMAD THORIQ AL FATH. , NISAUL FADILAH DALIMUNTHE , ILHAM PERKASA BAKO , RIVALDI SIDABUTAR , RADIA VELLA , VANNESS , LUKE GILBERT BUYSANG

2024

PENGEMBANGAN HEXAGONAL ROTARY DRYER MENJADI INTERGRATED OF PEELER, WASHER, AND DRYER (IPWD) BERBASIS INTERNET OF THINGS (IoT) SEBAGAI UPAYA PENINGKATAN KUALITAS KOPI SEBAGAI KOMODITAS UNGGULAN DI DESA SEMPA JAYA, KECAMATAN BERASTAGI, KABUPATEN KARO

DR IRIANY, IR, MSC , SHEYLIN WIMORA LUMBAN TOBING , RONDANG TAMBUN , RIVALDI SIDABUTAR

2024

PENGELOLAAN LINGKUNGAN SEHAT, BERSIH DAN NYAMAN DENGAN PENERAPAN TEKNOLOGI PROSES PENGOLAHAN SAMPAH DAN BUDIDAYA JAMUR MERANG MENJADI PRODUK KOMERSIAL UNTUK MENINGKATKAN PENDAPATAN MASYARAKAT SERTA PENGUATAN UPAYA TEKNIK PEMBIBITAN DAN PERBANYAKAN TANAMAN BAGI PETANI TOGA DI DESA KELAMBIR KECAMATAN PANTAI LABU KABUPATEN DELI SERDANG

ERNI MISRAN , BAMBANG TRISAKTI , FARIDA HANUM , ROSDANELLI HASIBUAN , RIVALDI SIDABUTAR

2023

HEXAGONAL ROTARY DRYER UNTUK PENINGKATAN EFISIENSI PENERINGAN BIJI KOPI DI DESA SEMPA JAYA, KECAMATAN BERASTAGI, KABUPATEN KARO

DR IRIANY, IR, MSC , DR.TASLIM, IR, MSC , RONDANG TAMBUN , RIVALDI SIDABUTAR

2025

Ipteks Bagi Masyarakat

Penguatan Kemandirian Ekonomi Masyarakat Desa Tadukan Raga Dengan Teknologi Kompor Konversi Sampah Menjadi Bahan Bakar Terbarukan Melalui Pendekatan Diseminasi Internasional

HIMSAR AMBARITA , BAMBANG TRISAKTI , FARIDA HANUM , RIVALDI SIDABUTAR , Peer Mohamed

2025

Ipteks

Penguatan Ekonomi Sirkular Desa Sempajaya pada Produksi Bioetanol Berbasis Limbah Organik Pertanian Melalui Focus Group Discussion dan Diseminasi Internasional

2018

Ipteks Bagi Wilayah Antara PT-CSR / PT-PEMDA-CSR

Pembangunan Pilot Plant (Bioreaktor, Jaringan Biogas, dan Kumbung Jamur) Fasilitas Pemanfaatan Limbah Non B3 Biomassa Menjadi Energi di Kabupaten Deli Serdang

BAMBANG TRISAKTI , IRVAN , RIVALDI SIDABUTAR

2022

Pemberdayaan Masyarakat Kelompok Pemerhati dan Pengguna Biogas di Desa tadukan Raga Kecamatan Sinembah Tanjung Muda Hilir Deli Serdang

BAMBANG TRISAKTI , KEULANA ERWIN , ALAM BAKTI , DESTANUL AULIA , IRVAN , RIVALDI SIDABUTAR

2023

PEMBERDAYAAN MASYARAKAT MELALUI BUDIDAYA MAGGOT DENGAN SISA SAMPAH ORGANIK SEBAGAI ALTERNATIF PAKAN IKAN DI DESA SEMPAJAYA, KECAMATAN BERASTAGI, KABUPATEN KARO

SHEYLIN WIMORA LUMBAN TOBING , MUHAMMAD HENDRA S GINTING , RIVALDI SIDABUTAR , MERSI SURIANI SINAGA
