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Dr. Irwana Nainggolan, M.Sc was born in Medan on January 13, 1979. She is a Chemistry lecturer at the Universitas Sumatera Utara. She completed her doctoral degree in Materials Science at Universiti Kebangsaan Malaysia in 2010.

Publications

2026
Jurnal nasional terakreditasi

Preparation and Characterization of Chitosan/Titanium Dioxide Film for Electrochemical Sensing Applications

IRWANA NAINGGOLAN , ANDRIAYANI , SAGIR ALVA , ASTRI ANJELINA NASUTION

2026
Prosiding seminar internasional

Preparation and characterization of chitosan/TiO2composites as a sensing material for humidity detector

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION , ARDIANSYAH SEMBIRING

2026
Jurnal internasional bereputasi

Fabrication of Lead(II) Ion-Selective Electrode (Pb-ISE) Based on Photopolymerization of Metyl Methacrylate-Tetrahydrofurfuryl Acrylate (MT) Copolymer Thin Films

IRWANA NAINGGOLAN , SAGIR ALVA , I GUSTI AYU ARWATI , MUHAMAD FITRI , TULUS IKHSAN NASUTION , RITA SUNDARI

2025
Prosiding seminar internasional

Synthesis of silica chitosan composite from rice hush ash and chitosan by sol-gel method cross-linked glutaraldehyde at low temperature

IRWANA NAINGGOLAN , SUPIYANI , PURWANTININGSIH , Harry Agusnar

2025
Prosiding seminar internasional

Effect of copper oxide addition on chitosan film conductivity and its possibility as a sensor material

IRWANA NAINGGOLAN , ANDRIAYANI , ARDIANSYAH SEMBIRING

2025
Jurnal internasional bereputasi

A novel sensitive electrode based on a chitosan/rGO/CuO composite for the detection of urea concentration

ANDRIAYANI , IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION , ARDIANSYAH SEMBIRING

2025
Jurnal nasional terakreditasi

Produksi Pupuk Kompos dengan Kematangannya Dikontrol Berdasarkan Perubahan Suhu Menggunakan Sensor

MUHAMMAD ROMI SYAHPUTRA , TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2025
Jurnal internasional bereputasi

Effects of Ferric Chloride as Secondary Dopant on the Properties of Polyethylene Oxide/Polyvinyl Chloride/Polyaniline Conductive Films

Mohamad Nur Fuadi Pargi , Meor Ahmad Faris , Mohammed Izzuddeen Mohd Yazid , Norliana Yusof , Azlin Fazlina Osman , IRWANA NAINGGOLAN

2024
Lain-lain

LPM USU Sosialisasi dan Serahkan Mesin Komposter Otomatis Hemat Energi untuk Tingkatkan Kemandirian Petani dalam Memproduksi PKO

IRWANA NAINGGOLAN

2024
Buku referensi

Kitosan dan Aplikasinya

IRWANA NAINGGOLAN , SUSILO SUDARMAN , ARDIANSYAH SEMBIRING

2024
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Sensitivity of chitosan film based electrode modified with reduced graphene oxide (rGO) forformaldehyde detection using cyclic voltammetry

SAISA , IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION , SAGIR ALVA

2024
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Sensitivity of Chitosan Film Based Electrode Modified with Reduced Graphene Oxide (rGO) for Formaldehyte Detection Using Cyclic Voltammetry

IRWANA NAINGGOLAN , ZUL ALFIAN , HARRY AGUSNAR , SAISA AHMAD , ARDIANSYAH SEMBIRING , Rozyanty Rahman , SAGIR ALVA , TULUS IKHSAN NASUTION

2023
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Preparation and Characterization of Chitosan/Reduced Graphene Oxide Film as a Sensing Material

IRWANA NAINGGOLAN , ARDIANSYAH SEMBIRING , ANDRIAYANI

2023
Prosiding seminar internasional

Interactions Between Chitosan Nano Silver (AgNPs): Synthesis and Activity for Antimicrobial Device

SOVIA LENNY , HARRY AGUSNAR , EMMA ZAIDAR , IRWANA NAINGGOLAN

2023
Jurnal nasional terakreditasi

Effect of Addition of Oleic Acid as a Template with Tetraethylorthosilicate (TEOS) as Source of Silica on Porosity Mesoporous Silica Material

ANDRIAYANI , IRWANA NAINGGOLAN , CLARESTA INGRID T

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Jurnal internasional bereputasi

Preparation sodium silicate from rice husk to synthesize silica nanoparticles by sol-gel method for adsorption water in analysis of methamphetamine

HARRY AGUSNAR , IRWANA NAINGGOLAN

2021
Prosiding seminar internasional

The effect of filler loading on mechanical properties of kenaf core fiber filled polypropylene composite: Tensile properties

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Influence of expandable graphite, aluminium hydroxide and lignin on mechanical properties of polyurethane foam

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The influence of mma esterification on interfacial adhesion and mechanical properties of hybrid kenaf bast/glass fiber reinforced unsaturated polyester composites

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2021
Jurnal internasional bereputasi

Effect of water and mechanical retting process on mechanical and physical properties of kenaf bast fiber reinforced unsaturated polyester composites

IRWANA NAINGGOLAN

2020
Jurnal internasional bereputasi

Chitosan-zinc oxide nanoparticle based highly sensitive electrochemical sensor for formaldehyde detection

IRWANA NAINGGOLAN

2020
Prosiding seminar internasional

Polymer of chitosan with ZnO addition to optimize high responsivity and sensitivity in Sensor Film

HARRY AGUSNAR , IRWANA NAINGGOLAN , ZUL ALFIAN

2020
Jurnal internasional

Effect Band Gap of Chitosan Film in Converting Water Vapour Into Electrical Current

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2020
Prosiding seminar internasional

The Characterization of Chitosan-ZnO Nanoparticles Modified Screen-Printed Copper Electrodes as the Analytical Sensor

HARRY AGUSNAR , IRWANA NAINGGOLAN , ZUL ALFIAN

2020
Prosiding seminar internasional

Thermal Properties of Chitosan-roselle Films

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2020
Prosiding seminar nasional

The Effects of Exfoliated Graphite Concentration on Sensing Properties of Chitosan/Exfoliated Graphite Film Crosslinked with Glutaraldehyde

HARRY AGUSNAR , IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

Formaldehyde Detection using Thin Film Sensor based on Chitosan Crosslinked with Glutaraldehyde

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN , HARRY AGUSNAR

2019
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The effect of Acetic Acid Ratio in the Electrodeposition Process of Chitosan/ZnO

ZUL ALFIAN , HARRY AGUSNAR , IRWANA NAINGGOLAN

2019
Jurnal internasional bereputasi

Energy harvesting properties of chitosan film in harvesting water vapour into electrical energy

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2018
Prosiding seminar internasional

The effect of ferredoxin in enhancing the sensing properties of chitosan based acetone sensors

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

Ethanol Purification Using Active Natural Pahae Zeolite By Adsorption Distillation Method

NASRUDDIN MN , YUAN ALFINSYAH SIHOMBING , IRWANA NAINGGOLAN , SUSILAWATI

2018
Prosiding seminar internasional

Testing of the charging and discharging characteristic of chitosan thick film as a capacitor dielectric

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2018
Prosiding seminar internasional

Application of MQ-138 Semiconductor Sensor for Breath Acetone Detection

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

High molecular chitosan-based seed shells (Tachypleus gigas) with silver nanoparticles as waste treatment of palm oil industry (pome)

HARRY AGUSNAR , IRWANA NAINGGOLAN , CHAIRUDDIN

2018
Prosiding seminar internasional

Milk powder quality degradation detection using chitosan film based sensor

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2018
Jurnal internasional bereputasi

THE PHYSIOCHEMICAL AND ANTIBACTERIAL PROPERTIES OF GALACTOMANNAN EDIBLE FILM OF ARENGA PINNATA INCORPORATED WITH ZINGIBER OFFICINALE ESSENTIAL OIL

JAMARAN KABAN , IRWANA NAINGGOLAN , JULIATI BR TARIGAN

2018
Prosiding seminar internasional

Sodium tripolyphosphate cross-linked chitosan based sensor for enhacing sensing properties towards acetone

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2018
Jurnal internasional bereputasi

Improved Electrical Power of Chitosan Film in Converting Water Vapour to Electrical Power by Adding Lithium Chloride

SUSILAWATI , TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2018
Prosiding seminar internasional

Study on chitosan film properties as a green dielectric

HARRY AGUSNAR , IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

Humidity detection using chitosan film based sensor

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

Improved lifetime of chitosan film in converting water vapor to electrical

power by adding carboxymethyl cellulose

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2017
Prosiding seminar internasional

Graphitization of oil palm trunk chip with controlled heating condition

IRWANA NAINGGOLAN

2017
Jurnal internasional

New Application of Chitosan Film as a Water Vapor Cell

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2017
Jurnal internasional

Fabrication of Chitosan-Polyethylene Oxide Polymeric Thin Film Using Electrochemical Deposition for Detection of Volatile Organic Compounds

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2017
Jurnal internasional bereputasi

Improvement on Alcohol Breath-Analyzer Ethanol Biosensor based on Roselle-Chitosan Blend

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2016
Prosiding seminar internasional

Highly Response and Sensitivity ChitosanPolyvinyl alcohol Based Hexanal Sensors

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2016
Jurnal internasional bereputasi

Hexanal Gas Detection Using Chitosan Biopolymer as Sensing Material at Room Temperature

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2015
Jurnal internasional

Highly Response and Sensitive Copper Sensors Based on Chitosan Films

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2015
Jurnal internasional

Electronic identification system of volatile organic compound gases using roselle-chitosan blend

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2015
Jurnal internasional

Ammonia Gas Sensor Based on Chitosan Biopolymer

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2015
Jurnal internasional bereputasi

Role of metals content in Spinach in enhancing the conductivity and optical band gap of chitosan films

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2015
Jurnal internasional bereputasi

Roselle Blend Film Sensor (RBFS) for Detecting Fertilizer Concentration of Grape Tree

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2015

Jurnal internasional

Manufacture of Water Vapour Filter Based on Natural Pahae Zeolite Used for Hydrogen Fueled Motor Cycle

IRWANA NAINGGOLAN , SUSILAWATI , HAMONANGAN NAINGGOLAN , TULUS IKHSAN NASUTION

2015
Jurnal internasional

Spinach Ferredoxin (Fdx) as an Organic Material to Improve Optical Band Gap of Chitosan (Cs) Biofilm

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2015
Jurnal internasional

The effects of branched-tail structure of surfactant on the phase behaviour of alkylglucoside/water/n-octane ternary system

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2015
Jurnal internasional

The Influence of Sintering Temperature and Mn-Ti Doped BaFe12O19 on The Microwave Absorbing Properties

NASRUDDIN MN , TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2014
Jurnal internasional

Chloroform Gas Sensor Based on Chitosan Biopolymer

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2014
Jurnal internasional

Chitosan Film Sensor (CFS) for Detecting Fertilizer Concentration of Grape Tree

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2013
Jurnal internasional

Water status detection by free-dipping method using Chitosan based sensor

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN , NASRUDDIN MN

2013
Jurnal internasional

Electrical properties of Chitosan-ferredoxin film

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2013
Jurnal internasional

Mechanical properties of paper from oil palm pulp treated with chitosan from horseshoe crab

IRWANA NAINGGOLAN , HARRY AGUSNAR

2013
Jurnal internasional bereputasi

The sensing mechanism and detection of low concentration acetone using chitosan-based sensors

TULUS IKHSAN NASUTION , IRWANA NAINGGOLAN

2009
Jurnal internasional bereputasi

The effect of the head group on branched-alkyl chain surfactants in glycolipid/n-octane/water ternary system

IRWANA NAINGGOLAN

2026
Prosiding seminar internasional

The sensitivity of chitosan/TiO2 film on ammonia detection

IRWANA NAINGGOLAN

Researches

2024
Ipteks Bagi Inovasi Kreativitas Kampus

INOVASI PEMUTUS RANTAI PENULARAN TUBERCULOSIS PARU MELALUI WADAH BERISI LISOL TERINTEGRASI STRATEGI DIRECTLY OBSERVED TREATMENT SHOURTCOURSE (DOTS)

IRWANA NAINGGOLAN , SYARIFAH , SITI KHADIJAH NASUTION , MARIO ALEXANDRO SIREGAR , PATRICIA ANANDA UWAIS LBS , CHRISELLA GIRSANG , DHIRA KARTIKA AMANDA , GABRIEL SITUMEANG

2022
Penelitian Dana Lokal Perguruan Tinggi

PENGEMBANGAN SENSOR BERBASIS KITOSAN-TITANIUM DIOKSIDA SEBAGAI SENSOR SUHU DAN KELEMBABAN MEDIA HIDUP DAN BERKEMBANG MAGGOT BSF UNTUK MENINGKATKAN PRODUKTIVITAS BUDIDAYA IKAN

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION , HUMAM RAFI RACHMAD , ASTRI MAYA SANI , MISUKI AWANDA , PUTRI HANDAYANI RITONGA , EVIARTHA ULINA SIADARI

2021
Penelitian Dana Lokal Perguruan Tinggi

Karakteristik Elektroda Tembaga Termodifikasi Kitosan/TiO2 Dalam Mendeteksi Amoksisilin Dengan Metode Voltametri Siklik

IRWANA NAINGGOLAN , HARRY AGUSNAR

2019
Penelitian Dana Lokal Perguruan Tinggi

SENSOR ELEKTROKIMIA BERBASIS KITOSAN-GRAFENA OKSIDA TEREDUKSI (rGO)- NANOPARTIKEL ZnO UNTUK PENENTUAN KONSENTRASI METRONIDAZOLE

IRWANA NAINGGOLAN , CHAIRUDDIN

2019
Penelitian Dana Lokal Perguruan Tinggi

SENSOR ELEKTROKIMIA BERBASIS KITOSAN-GRAFENA OKSIDA TEREDUKSI (rGO)- NANOPARTIKEL ZnO UNTUK PENENTUAN KONSENTRASI METRONIDAZOLE

IRWANA NAINGGOLAN , CHAIRUDDIN

2018
Penelitian Dana Lokal Perguruan Tinggi

Pengaruh Ikat Silang pada Sifat Penginderaan Sensor Film Kitosan-Grafena Oksida Tereduksi dalam Mendeteksi Kandunga Formalin

IRWANA NAINGGOLAN , HARRY AGUSNAR

2018
Penelitian Dana Lokal Perguruan Tinggi

PEMBUATAN MEMBRAN DARI KOMPOSIT CHITOSAN-ZEOLIT SEBAGAI ELEKTROLIT POLIMER UNTUK APLIKASI FUEL CELLS

IRWANA NAINGGOLAN , YUAN ALFINSYAH SIHOMBING

2018
Penelitian Dosen Pemula

Pembuatan Membran dari Komposit Chitosan-Zeolit sebagai Elektrolit Polimer Untuk Aplikasi Fuel Cells

SUSILAWATI , IRWANA NAINGGOLAN , YUAN ALFINSYAH SIHOMBING

Community Services

2024

Ipteks Bagi Masyarakat

Penggunaan Mesin Komposter Otomatis Hemat Energi Untuk Meningkatkan Kemaandiriaan Petani dalam Memproduksi Pupuk Kompos Orrganik

IRWANA NAINGGOLAN , MUHAMMAD ROMI SYAHPUTRA

2018
Ipteks Bagi Masyarakat

ALAT PENGERING BUAH KEMIRI TENAGA SURYA DI KECAMATAN PANCUR BATU-DELI SERDANG

KERISTA SEBAYANG , IRWANA NAINGGOLAN , MUHAMMAD ZULHAM EFENDI SINAGA

2018
Ipteks Bagi Masyarakat

Alat Pengering Belacan Higienis Tenaga Surya di Desa Pulau Kampai Pangkalan Susu

SUSILAWATI , IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION , YUAN ALFINSYAH SIHOMBING

Intellectual Property Rights

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PRODUK LARVASIDA ALAMI DARI SERBUK BIJI JARAK KEPYAR (Ricinus communis) UNTUK MEMBUNUH JENTIK NYAMUK Aedes aegypti

SITI NABILAH , DELA SUCI SUTISNA , AHMAD SADEWO PUTRO ISKANDAR , AHMAD ZAKI , WINNI R. E. TUMANGGOR , IRWANA NAINGGOLAN , INDRA CHAHAYA

2025
Paten nasional

KIT SENSOR BERBASIS KITOSAN-GRAFENA OKSIDA TEREDUKSI-TEMBAGA OKSIDA UNTUK MENDETEKSI KONSENTRASI PUPUK UREA

IRWANA NAINGGOLAN , ARDIANSYAH SEMBIRING , TULUS IKHSAN NASUTION

2024
Paten nasional

KIT SENSOR BERBASIS KITOSAN-MANGAN DIOKSIDA-GRAFENA OKSIDA TEREDUKSI UNTUK PENDETEKSIAN KADAR KOLESTEROL DALAM DARAH

TULUS IKHSAN NASUTION , ARDIANSYAH SEMBIRING , ATHAYA SAMIRA DUHA , IRWANA NAINGGOLAN

2024
Paten nasional

KIT SENSOR BERBASIS KITOSAN-GRAFENA OKSIDA TEEDUKSI UNTUK MENDETEKSI KONSENTRASI EPINEFRIN

IRWANA NAINGGOLAN , TULUS IKHSAN NASUTION

2023
Paten nasional

Proses Pembuatan Kit Sensor Berbasis Kitosan Serium Oksida (CeO) Untuk Mendeteksi Konsentrasi Aseton

IRWANA NAINGGOLAN

2023
Paten nasional

Membran separator dari serat serabut kelapa-fiber glass untuk pemisahan hidrogen dan oksigen pada elektrolizer air

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2022
Paten nasional

Metode Pembuatan Kit Sensor Berbahan Kitosan-Grafena Oksida Tereduksi Sebagai Elektroda Kerja Untuk Mendeteksi Antibiotik Metronidazole Dengan Voltametri Siklik

IRWANA NAINGGOLAN

2021
Paten nasional

PROSES PEMBUATAN KIT SENSOR KITOSAN-ZINK OKSIDA-GRAFENA SEBAGAI FILM SENSOR PENDETEKSIAN FORMALIN DALAM BAHAN MAKANAN

IRWANA NAINGGOLAN

2019
Paten nasional

KOMPOSISI SEDIAAN FARMASI KOMBINASI EKSTRAK ETANOL DAUN SAMBUNG NYAWA (GYNURA PROCUMBENS) DAN DAUN KEMANGI (OCIMUM SANCTUM L) SEBAGAI ANTIDIABETES

IRWANA NAINGGOLAN , MUHAMMAD ZULHAM EFENDI SINAGA