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*Dr. Tulus Ikhsan Nasution, S.Si., M.Sc. born in P. Brandan on July 16, 1974, is a Physics lecturer at the Universitas Sumatera Utara. He completed his doctoral degree in Electonic Materials at USM in 2013.*

## Publications

2025
Prosiding seminar nasional

### Workshop Hidroponik untuk Mahasiswa School Biologi, Universiti Sains Malaysia, Penang, Malaysia

NISMAH PANJAITAN , AMEILIA ZULIYANTI SIREGAR , TULUS IKHSAN NASUTION , ZULKIFLI , Nik Mohd.Izham Mohd.Nor , Abdul Hafiz Ab.Majid , Abdul Hafiz Ab.Majid , Rosnida Tajuddin

2024
Jurnal nasional terakreditasi

### Characteristics of Extreme Rainfall Events in North Sumatra

MARZUKI SINAMBELA , TULUS IKHSAN NASUTION

2024
Jurnal nasional terakreditasi

### Analysis of Interaction Between Atmosphere and Sea Using The Delft3D Hydrodynamics Model for Mapping Coastal Flood Zone at Belawan Port and Coastal

RIZKI FADHILLAH PRATAMA PUTRA , YAHYA DARMAWAN , SYAHRUL HUMAIDI , TULUS IKHSAN NASUTION

2023
Jurnal nasional terakreditasi

### Design and Development of A Digital Soil Temperature Monitoring System Based on The Internet of Things at North Sumatra Climatological Station

KHINDI AUFA HIBATULLAH , IMMANUEL JHONSON ARIZONA SARAGIH , ROYSTON MANURUNG , SYAHRUL HUMAIDI , TULUS IKHSAN NASUTION , MARHAPOSAN SITUMORANG , YAHYA DARMAWAN

2023
Jurnal nasional terakreditasi

### Accuracy of Weather Radar Products for Rainfall Estimation in North Sumatra Region

MARHAPOSAN SITUMORANG , YOLANDA MUTIARA TONDANG , TULUS IKHSAN NASUTION , YAHYA DARMAWAN

2022
Jurnal nasional terakreditasi

### Waste Processing as Organic Compost Fertilizer Using Smart Composter in Sei Ular Village, Secanggang District, Langkat Regency

TULUS IKHSAN NASUTION , ACHMAD SADELI

2021
Prosiding seminar internasional

### Tradition lubuk larangan as a local wisdom for ecocultural tourism river management through landscape anthropolinguistic approach in

## Mandailingnese

TULUS IKHSAN NASUTION

2021
Prosiding seminar nasional

## Pemanfaatan Penggunaan Maggot Lalat Tentara Hitam sebagai Pakan Ternak Alternatif Tinggi Protein di Desa Sayur Matua

TULUS IKHSAN NASUTION

2021
Jurnal nasional terakreditasi

## PENGEMBANGAN UNIT PENGELOLAAN LIMBAH SISTEM MANAJEMEN LIMBAH (SIMALIM) DENGAN SMART URBAN FARMING DALAM MENGELOLA LIMBAH ORGANIK DI KAMPUS USU

TULUS IKHSAN NASUTION

2021
Prosiding seminar internasional

## The role of environment restoration on microclimate sustainability in Perumahan Cemara Asri Medan

TULUS IKHSAN NASUTION

2021
Prosiding seminar internasional

## The use of BSF (Black Soldier Fly) maggot in mini biopond as a solution for organic waste management on a household scale

TULUS IKHSAN NASUTION

2021
Prosiding seminar internasional

## Cyclist test on particleboards and utilization of their liquid disposal for fertilizer

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## Properties of fibreboard (FBs) and recycle fibreboard (rFBs) and analysis of their wastage after recycling

TULUS IKHSAN NASUTION

2020
Artikel ilmiah

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

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## Preface: The 1st International Conference on Physics and Applied Physics (the 1st ICP&AP) 2019

TULUS IKHSAN NASUTION

2020
Artikel ilmiah

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

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## Teacher performance toward students’ mathematical literacy in teaching linear program mathematical models

TULUS IKHSAN NASUTION

2020
Tulisan ilmiah

## Thermal Properties of Chitosan-roselle Films

TULUS IKHSAN NASUTION

2020
Tulisan ilmiah

## Peningkatan Sifat Elektrik dan Penginderaan Film Kitosan dengan Penambahan Licl (Litium Klorida) Sebagai Sensor Kelembaban Udara

TULUS IKHSAN NASUTION

2020
Jurnal internasional bereputasi

## The improvement of mechanical properties of hydrogen filter based on natural zeolite from pahae and clay addition

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## A real-time phytoplankton growth monitoring using TCS-3200 color sensor

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## An automatic stirring system based on temperature control on composter for the production of organic liquid fertilizer

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## Utilization of sensor TGS 821 as hydrogen detection of result water electrolysis process in real time with DAQ on PC

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## Automatic and Realtime Control of pH Level in Water Catfish Cultivation

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## An Automatic and Realtime Control of Ammonia Concentration in Catfish Pond Water Based on MQ137 Sensor

TULUS IKHSAN NASUTION

2020
Prosiding seminar internasional

## Effect band gap of chitosan film in converting water vapour into electrical current

TULUS IKHSAN NASUTION

2019
Jurnal nasional terakreditasi

## Environtmentally healthy sleep light

TULUS IKHSAN NASUTION , SUSILAWATI

2019
Jurnal internasional bereputasi

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

TULUS IKHSAN NASUTION

2019
Jurnal nasional terakreditasi

## Environtmentally healthy sleep light

TULUS IKHSAN NASUTION

2019

Jurnal internasional

## The Effectiveness of Acetone Breath Content Using Chitosan Based Sensor in Patients Diabetes Mellitus. Open Access Maced J Med Sci. 2019 Oct 30; 7 (20): 3391-3394

TULUS IKHSAN NASUTION

2019
Prosiding seminar internasional

## Improving zeolite power of pahae natural adsorption as the hydrogen filter with the addition of blood clams (Anadara Granosa) as the filler

TULUS IKHSAN NASUTION

2019
Jurnal internasional

## The effectiveness of acetone breath content using chitosan based sensor in patients diabetes mellitus

TULUS IKHSAN NASUTION

2018
Jurnal internasional

## Application of MQ-138 Semiconductor Sensor for Breath Acetone Detection

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

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

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

## Fabrication of Ceramic Composites Based on CuO-ZnO

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

## Compatibilitation of cyclic natural rubber (resiprene-35) with polypropylene in the presence of oleic acid and benzoyl peroxide

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

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

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2018
Prosiding seminar internasional

## Talenta

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

## Milk powder quality degradation detection using chitosan film based sensor

TULUS IKHSAN NASUTION

2018
Jurnal nasional terakreditasi

## ALAT PENJERNIH AIR YANG DIINTEGRASIKAN DENGAN POMPA AIR TENAGA SURYA

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

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

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

2018
Prosiding seminar internasional

## Humidity detection using chitosan film based sensor

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

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

TULUS IKHSAN NASUTION

2018
Prosiding seminar internasional

## Study on chitosan film properties as a green dielectric

TULUS IKHSAN NASUTION

2017
Prosiding seminar internasional

## Optimizing Robinson Operator with Ant Colony Optimization As a Digital Image Edge Detection Method

TULUS IKHSAN NASUTION

2017
Jurnal internasional

## Improvement on alcohol Breath-Analyzer ethanol biosensor based on roselle-chitosan blend

TULUS IKHSAN NASUTION

2017
Prosiding seminar internasional

## Improved electrical properties of chitosan based acetone sensor by adding carboxymethylcellulose (CMC)

TULUS IKHSAN NASUTION

2017
Prosiding seminar internasional

## New application of chitosan film as a water vapor cell

TULUS IKHSAN NASUTION

2017
Prosiding seminar internasional

## Fabrication of chitosan-polyethylene oxide polymeric thin film using electrochemical deposition for detection of volatile organic compounds

TULUS IKHSAN NASUTION

2017
Jurnal internasional

## Hydrogen purification using natural pahae zeolit and cocoa rind based filter

TULUS IKHSAN NASUTION

2016
Prosiding seminar internasional

## Highly Response and Sensitivity Chitosan-Polyvinyl alcohol Based Hexanal Sensors

TULUS IKHSAN NASUTION

2016
Prosiding seminar internasional

## Design of Edible Oil Degradation Tool by Using Electromagnetic Field

## Absorbtion Principle which was Characterized to Peroxide Number

TULUS IKHSAN NASUTION

2016
Artikel ilmiah

## Pendeteksi Suhu Tanah Kompos Menggunakan Sensor Ds18b20 Berbasis Mikrokontroler Atmega328

TULUS IKHSAN NASUTION

2016
Jurnal internasional bereputasi

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

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

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

TULUS IKHSAN NASUTION

2015
Jurnal internasional

## Electronic Identification System of Hazardous Volatile Organic Compound Gases using Roselle-Chitosan Blend

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

## Highly Response and Sensitive Copper Sensors Based on Chitosan Films

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

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

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

## Spinach ferredoxin (Fdx) as an organic material to improve optical band gap of chitosan (Cs) biofilm

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

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

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

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

TULUS IKHSAN NASUTION

2015
Jurnal internasional bereputasi

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

TULUS IKHSAN NASUTION

2015
Prosiding seminar internasional

## Ammonia gas sensor based on chitosan biopolymer

TULUS IKHSAN NASUTION

2014
Prosiding seminar internasional

### Chitosan film sensor (CFS) for detecting fertilizer concentration of grape tree

TULUS IKHSAN NASUTION

2014
Prosiding seminar internasional

### Chloroform gas sensor based on chitosan biopolymer

TULUS IKHSAN NASUTION

2013
Jurnal internasional

### Water status detection by free-dipping method using chitosan based sensor

TULUS IKHSAN NASUTION

2013
Prosiding seminar internasional

### Electrical properties of chitosan-ferredoxin film

TULUS IKHSAN NASUTION

2013
Tulisan ilmiah

### Chitosan Based Acetone Sensor For Detecting Low Concentration Acetone

TULUS IKHSAN NASUTION

2013
Jurnal internasional bereputasi

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

TULUS IKHSAN NASUTION

2026
Artikel ilmiah

### PERANCANGAN VISKOSIMETER DIGITAL UNTUK MENGUKUR VISKOSITAS MINYAK BERBASIS MIKROKONTROLER AT8535 DENGAN TAMPILAN PC NURJANNAH1

TULUS IKHSAN NASUTION

2026
Artikel ilmiah

### River Water Purifier as an Alternative for Clean Water Supply in Sei Siarti Village, Panai Tengah District, Labuhanbatu Regency

TULUS IKHSAN NASUTION

## Researches

2021
Penelitian Unggulan Perguruan Tinggi

### KOMPOSTER 4.0 BERBASIS INTERNET OF THINGS DAN TENAGA SURYA

MARIANI BR SEMBIRING , TULUS IKHSAN NASUTION

2020

### KOMPOSTER 4.0 BERBASIS INTERNET OF THINGS DAN TENAGA SURYA

MARIANI BR SEMBIRING , TULUS IKHSAN NASUTION

2020
Penelitian Unggulan Perguruan Tinggi

### Penggunaan Membran Separator dari Serat Serabut Kelapa-Fiber Glass untuk Pemisahan Hidrogen dan Oksigen pada Elektrolilzer Air

TULUS IKHSAN NASUTION

# Community Services

2025

### Dewan Pakar PUI Pengendalian Emisi Gas Rumah Kaca

TULUS IKHSAN NASUTION , YENI ABSAH

2023
Ipteks Bagi Masyarakat

### Pemetaan Hutan Mangrove Menggunakan Teknologi Drone untuk Pengembangan Ekowisata di Desa Lubuk Kasih Kecamatan Brandan Barat Kabupaten Langkat

TULUS IKHSAN NASUTION , ACHMAD SIDDIK THOHA , ORANG KAYA HASNANDA SYAHPUTRA , IRWAN SARAGIH , SHOFIA PUTRI NASIBAH , MIRANDA ANGGRAINI , CHRISTINE PATRESYA A.M. , SHIVA KARILLA UTIYA

2021
Ipteks Bagi Masyarakat

### PENGOLAHAN LIMBAH SEBAGAI PUPUK KOMPOS ORGANIK DENGAN MENGGUNAKAN KOMPOSTER PINTAR DI DESA SEI ULAR KECAMATAN SECANGGANG KABUPATEN LANGKAT

ACHMAD SADELI , TULUS IKHSAN NASUTION

2021
Penelitian Dosen Pemula

### Penerapan Sensor Amoniak untuk Menjaga Kualitas Air Kolam Ikan Pintar

TULUS IKHSAN NASUTION , RAJU

2018

### Pemanfaatan Alat Pengering Buah Kemiri Tenaga Surya di Keamatan Pancur Batu Deli Serdang

TULUS IKHSAN NASUTION

# Intellectual Property Rights

2025
Paten nasional

### Alat Pendeteksi Keseimbangan Massa Tubuh Pada Anak dengan Maloklusi

ERVINA SOFYANTI , VERONICA ANGELIA , MIMI MARINA LUBIS , AMI ANGELA HARAHAP , TULUS IKHSAN NASUTION , AISYAH FATHINAH , Julies Alkins

2024
Hak cipta nasional

### Peta Kawasan Ekowisata Mangrove Desa Lubuk Kasih Kecamatan Brandan Barat Kabupaten Langkat

ACHMAD SIDDIK THOHA , TULUS IKHSAN NASUTION , DWI LESTARI NALAI HULU , ORANG KAYA HASNANDA SYAHPUTRA

2023
Paten nasional

### BAHAN PENGISI DARI KULIT KERANG DARAH (ANADARA GRANOSA) UNTUK PEMURNIAN GAS HIDROGEN HASIL PEMISAHAN MOLEKUL AIR DENGAN METODE ELEKTROLISA

SUSILAWATI , TULUS IKHSAN NASUTION

2023
Paten nasional

### Bahan Pengisi Dari Kulit Kerang Darah (Anadara Granosa) Untuk Pemurnian Gas Hidrogen Hasil Pemisahan Molekul Air dengan Metode Elektrolisa

ADI SYAHPUTRA PURBA , TULUS IKHSAN NASUTION

2023
Paten nasional

### Kolam Ikan Pintar berbasis sensor MQ135

TULUS IKHSAN NASUTION

2023
Paten nasional

## Kolam Ikan Pintar Berbasis Sensor MQ137 Dan Media Tanam Dari Serat Enceng Gondok-Zeolit

TULUS IKHSAN NASUTION

2021
Hak cipta nasional

## Permainan Game Board Ular Tangga Menggunakan Joystick Untuk Edukasi COVID-19

R KINTOKO ROCHADI , TULUS IKHSAN NASUTION , IVAN JAYA , SYARIFAH

2021
Paten nasional

## ALAT PENDETEKSIAN KEMATANGAN BUAH KELAPA SAWIT BERBASIS SENSOR KONFIGURASI WENNER

TULUS IKHSAN NASUTION

2021
Paten nasional

## ALAT PENAMBAHAN NUTRISI SECARA OTOMATIS DENGAN MENGGUNAKAN SENSOR KONDUKTIVITAS

TULUS IKHSAN NASUTION

2021
Paten nasional

## ALAT PENAMBAHAN NUTRISI SECARA OTOMATIS DENGAN MENGGUNAKAN SENSOR KONDUKTIVITAS

TULUS IKHSAN NASUTION

2021
Paten nasional

## ALAT PENDETEKSIAN KONSENTRASI AMONIA AIR KOLAM IKAN PADA BUDIDAYA IKAN AIR TAWAR DENGAN METODE PENGGELEMBUNGAN

TULUS IKHSAN NASUTION

2020
Paten nasional

## PENGGUNAAN CAMPURAN SERAT SELULOSA TANDAN KOSONG KELAPA SAWIT DAN FIBER GLASS SEBAGAI SEPARATOR H2O PADA ELEKTROLIZER AIR

TULUS IKHSAN NASUTION

2018
Paten nasional

## KIT FILTER HIDROGEN YANG MENGANDUNG ZEOLIT UNTUK PEMURNIAN GAS HIDROGEN HASIL PEMISAHAN MOLEKUL AIR DENGAN METODE ELEKTROLISA

SUSILAWATI , TULUS IKHSAN NASUTION , FYNNISA. Z