LIST OF SELECTED

RESEARCH PROJECTS

CENTRE FOR ENVIRONMENTAL SUSTAINABILITY AND WATER SECURITY (IPASA)

Water and Wastewater Treatment

- Characterization of resin extracted from cactus (Opuntiaficus-indica) as natural coagulant for water purification.
- Kinetics of Sewage Effluent Organic Matter on the Removal of Pharmaceutical Compounds during Wastewater Ozonation.
- Optimization of Conventional Water Treatment Plant Operational Practices in Removing New Emerging Pollutants.
- Micro-Pollutants Removal using Combined Membrane Filtration, Advanced Oxidation Process and Adsorption for Safe Drinking Water.
- Characterization of the Stereochemical Transformation of Reactive Azo, Anthraquinone and Triazine Dye Catalyzed by Ligninolytic Enzymes Secreted from White-Rot Fungi.
- Evaluation on the Fate and Transport Behavior Mechanisms of Nanosilver Particles in the Water Environment.
- Molecular Structural Transformation of Organochlorine and Organobromine catalyzed by Lignin-Metabolizing Enzymes Secreted from Basidiomycetes Fungi.
- Development of Polycylic Aromatic Hydrocarbons (PAHs) Degradation Method using Consortium of Crude Enzyme Isolated from Fungus and Earthworm (*Eiseniafetida*).
- Treatment of Poultry Slaughterhouse Wastewater Using Integrated Anaerobic/Aerobic Sequencing Batch Reactor.
- Phosphorus Removal from Domestic Wastewater Treatment Plant Effluents using *Serratia Marcescens*.
- Bio-assessment Fish Population and Investigate Impact of Endocrine Disrupting Compounds (EDCs) in the Aquatic Environment.
- Characterization and Reaction Mechanism of Persistent Organic Pollutants (POPs) Toxicity In Bioluminescent Fungi Isolated from Oil Refinery Environment.
- Evaluation on the Fate and Transport Behavior Mechanisms of Nanosilver Particles in the Water Environment.
- Assessment of Leachate Biodegradation in the Presence of Zeolite under Anaerobic Condition.
- Evaluation of Bioluminescent Fungi for Monitoring and Classify Persistent Organic Pollutant (POPs) Toxicity.
- Mechanism of Adsorption and Characterization of Natural Clinoptilolite, Crushed Cockle Shell and Fly Ash as Natural River Treatment.
- Immobilized-Cell Reactor Technology for Enhanced Sustainable Bio- Energy and Treatment Efficiency of POME.
- Development of Photosynthetic Microbial Granules Based for Carbon Dioxide Emission Reduction of POME.
- Mechanistics and Kinetics of Carbon Dioxide Biofixation in Photosynthetic Aerobic Granules.
- Evaluation of Flood Disaster Impacted on Water Quality and Aquatic Habitat in Water Environment.
- Evaluation of Risk and Abatement Measures in Flood Disaster Impacted Area for Sustainable Waste Management.
- Treatment of Landfill Leachate Using Combined Advanced Oxidation Processes and Porous Membrane Activated Sludge Reactor.
- Adsorptive Potential of Sulfonated poly(Glycidylmethacrylate) - Grafted Polymer For Separation of Metal Ions From Aqueous Solution.
- Formaldehyde Removal from Synthetic Contaminated Air by Bio-trickling Filter Reactor.
- Tertiary Treatment of POME using Hydroxyl Radical Oxidation via Hydrodynamic Cavitation Technique.
- Application of Combined Zeolite from Fly Ash and Crushed Sea Shell in River Pollution Controls.
- Development of photosynthetic microbial granules based for carbon dioxide emission reduction of palm oil mill effluent.
- Inhibition of Sulfate Reduction Bacteria to Enhance Methane Yield in Anaerobic Digester.
- Application of Combined Zeolite from Fly Ash and Crushed Sea Shell in River Pollution Controls.
- Characterization of Enzymatic Transformation of Synthetic Dyes in the Liquid Culture by Ligninolytic Fungi.
- Evaluation of Earthworms (Eiseniafetida) and Immobilized Laccase to Accelerates the Removal and Transform Persistent Organic Pollutants (POPs) in Soil.
- Co-digestion of Mesocarp Fibre with Poultry-Manure under Anaerobic Condition.
- Bioremediotional of Ulva and Gracillaria Species in an Integrated Multi-Tropic Aquaculture (IMTA) System.
- Performance Assessment of Integrated Treatment System utilizing Fenton and Aerobic Submerged Membrane Bioreactor for the Treatment of Spent Caustic.
- Development of New Form Biogranular Sludge under the Influence of Magnetic Induction for Industrial Wastewater Treatment.

» Characterization of Alginate-Like Exopolysaccharides Isolated from Aerobic Granular Sludge in Industrial Wastewater.
» Anaerobic Co-Digestion of Palm Oil Mesocarp Fibre with Cattle Manure for Biogas Production.
» Shrimp Pond Effluent Bioremediation Using Macroalgae Tank Culture And Bio-Sand Filtration (BSF) To Promote Zero Discharge Effluent System.
» Discontinuous Anoxic Aerobic Reactor (DAAR) to Remove Carbonaceous and Nitrogenous Matter from Domestic Wastewater.
» Transformation Pathway of High Molecular Weight (HMW) Polycylic Aromatic Hydrocarbon (PAH) by White Rot Fungi.
» Recovery of Nutrient from Municipal Wastewater Treatment Plant Effluents Applied to Hybrid Plug-Flow Column Reactor.
» Treatment of Refinery Plant-Based Sulfidic Spent Caustic by Combination of Fenton Oxidation and Wet Air Oxidation (WAO).
» Development of Anaerobic Granules Containing New Specialised Dye Degrading Microbes for Raw Textile Dyeing Wastewater Treatment.

Hydrology, Water Resources, Water Quality Management and Water Supply

» Combining Peakflow, Volume and Duration Using Bivariate Copula Method for an Improved Flood Frequency Modelling. Watershed Level Assessment of Climate Change and Land Use on Future Water Security.
» Rainwater Harvesting in UTM Campus.
» Agricultural Non Point Source Pollution and Impact on Reservoir Sedimentation and Water Quality.
» Combining Instream Routing and Satellite Imagery for Integrated Flood Early Warning System.
» A System Dynamic Approach for Forecasting Water Demand in Urban Areas of Malaysia.
» Vulnerability and Adaptation to Climate Change in Groundwater-dependent Irrigation System in Malaysia and in Asian Countries.
» Improvement of pH in SAJH Water Network of Tenggaroh Area.
» Pilot-Scale Study of Sg. Bekok Acidic Water Treatment Using Zeolite-Limestone Infiltration Technique.
» Biological Criteria Using Macrobenthos as a Tool for River Restoration.
» Macrobenthos as a Potential Bioindicator for Tropical Rivers.
» Impacts of Land use and Climate Change on River Discharge and Sediment Flux.
» Statistical Analysis of Climate Data to Assess Climate Change Impacts on Hydrological Extremes and Adaptation Needs in the East Coast of Malaysia.
» Modelling the Impacts of Climate Variability and Changes on Groundwater Resources in Tropical Region.
» Clean Water Well for Water Supply Enhancement in Cambodia.
» Stochastic Modeling of Rainfall for Multi-Site.
» Study on the Potential Rainwater Utilization in Supplementing Water Demand Management in Industrial Area.
» Development of Best Management Practices for Controlling Erosion and Sedimentation in Oil Palm Catchments.
» Optimization of Coagulation Conditions Using Statistical Approach.
» Developing a Model Project for Cost Analysis to Achieve Sustainable Forest Management.
» Effects of Forest Plantation Establishment on Hydrological Attributes.

Green Technology, Solid Waste, etc.

» Exploration of Cool-Pavement Materials by Using Wasted Ceramic Tiles towards Combating Urban Heat Island Phenomenon.
» Algae as Energy Securing, Supplement Reserve and Formulating Carbon Sequestration for Waste Management from POME.
» Potential of Water Hyacinth Dried Biomass Biobriquette with Palm Oil Mill Wastes Mixture as Green Fuel Alternative.
» Estimating the Pattern of Municipal Solid Waste Generation Area in A GIS Environment towards Low Carbon Society Formation in Iskandar Region, Malaysia.
» Development of Albedo Design of Urban City Surface for Urban Heat Island Control.
» Development of Indicators to Assess Urban Sustainability in Malaysia.
» Development of Low Carbon Society in Iskandar Malaysia.
» Analytical Hierarchy Process: Multi-Criteria Method for Sustainable Municipal Solid Waste Disposal Option in Tropic Climates.
» Thermal Behaviour from Urban Heat Island (UHI) Phenomena for Energy Saving and Heat Flux Mechanisms in Vertical Surfaces.