University of Jaffna and Vavuniya campus—Academic and Research activities

• Introduction: Sri Lanka
• Introduction: University of Jaffna and Vavuniya campus
• Academic work
• Research work
• My previous and current research interests

Location of Sri Lanka

• Southern Asia
• Island in Indian ocean

Natural Resources

• Limestone
• Graphite
• Mineral sands
• Phosphates
• Clay
• Hydropower

Current Environmental issue

• Deforestation
• Soil erosion
• Wild life population threatened by poaching and urbanization
• Coastal degradation and mining activities and increased pollution
• Fresh water resources getting polluted by industrial wastes and sewage run off
• Waste disposal and Air pollution
Universities in Sri Lanka
There are 15 Universities
- University of Colombo
- University of Peradeniya
- University of Jaffna
- University of Kelaniya
- University of Moratuwa
- University of Sri Jayawardenepura
- University of Ruhuna
- Open University of Sri Lanka
- Eastern University of Sri Lanka
- Rajarata University
- Sabaragamuwa University
-, University of Sri Lanka
- Wayamba University
- University of Sri Lanka
- University of Ruhuna
- University of Sri Lanka
- University of Visual & Performing Arts

University of Jaffna
Six Faculties
* Faculty of Agriculture
* Faculty of Arts
* Faculty of graduate studies
* Faculty of Management studies and Commerce
* Faculty of medicine
* Faculty of Science

Vavuniya campus
Established in 1999 by elevating the Northern province affiliated University college
- Two Faculties
- Faculty of Applied Science
- Faculty of Business studies

Faculty of Applied Science
- Department of Physical Science- Pure and Applied mathematics, Physics and Computer Science
- Department of Biological Science- Biology, Chemistry and Environmental Science

Degree from Department of Biological Science
- Three year degree program: BSc Environmental Science
- Four year degree program: Special degree in Environmental Science

Department of Physical Science
- B.Sc in Applied Mathematics and Computing
- Bachelor of Information and communication Technology (BICT)
Academic program-Biological Science

- Different courses in Environmental Science and Biological Science
- There are 4 levels
  * Level 1: Fundamentals of Biology, Chemistry and Environmental Science
  * Level 2, Level 3 and Level 4: Introduces advanced concepts together with applications

Level 4

- Advanced courses in Environmental Science
- Project-Analyse problem, plan and design a method, analyse and interpret the results, write a report and presenting the outcome of the work

Academic work

- Lectures in Organic Chemistry, Inorganic chemistry, Analytical Chemistry and Environmental chemistry
- Environmental Chemistry- Water management and water pollution control

Research works of the Campus

- Research projects in GIS and modelling
- Activity of some plant extracts against Mosquito
- Research work on phytomediation: Uptake possibilities of Pb by some plant species and its capacity to accommodate and tolerate high dose of Pb
- Studies to adsorb Ni metal by a plant species from soil

My research interests

- Natural product organic chemistry and organic synthesis
  * Isolation of insecticidal active compounds from plant extracts and characterisation of the compound
  * Structural modification of the compound and check the activity
  * Synthesis of medicinal compounds

Current Research interests

- Student projects- water analysis
  Analysis for chemical parameters
  Heavy Metals: Atomic Absorption spectroscopy
  Total nitrogen and Nitrates: UV-Visible spectroscopy and Digestion methods-Kjeldahl method
Some results from the chemical analysis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Sample 3</th>
<th>Main drain</th>
<th>Sample 4</th>
<th>Sample 5</th>
<th>Sample 6</th>
<th>Sample 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hardness (mg/L)</td>
<td>1.38</td>
<td>0.98</td>
<td>1.10</td>
<td>2.89</td>
<td>0.46</td>
<td>2.9</td>
<td>3.72</td>
<td></td>
</tr>
<tr>
<td>BOD (mg/L)</td>
<td>10</td>
<td>18</td>
<td>25</td>
<td>85</td>
<td>08</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD (mg/L)</td>
<td>540</td>
<td>250</td>
<td>181</td>
<td>822</td>
<td>2892</td>
<td>100</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Salinity (μS/cm)</td>
<td>630</td>
<td>380</td>
<td>920</td>
<td>940</td>
<td>1670</td>
<td>600</td>
<td>1190</td>
<td></td>
</tr>
<tr>
<td>Heavy metals (Pb, Cd, Cr)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Ground water quality and common pollutants

* High fluoride - A low-cost filter to remove fluoride for house hold use is being tested
* High Fe
* Brackish water intrusion (Cl–)
* Nitrate (NO3–) – use of Agro-chemical fertilizers Excess irrigation water and high permeability of soils resulted in significant nitrate pollution in ground water
* Coliform contamination: Open sewages, pit latrines and septic tanks

Present research work

* Oxidation coupled with flocculation in the removal of organic matter from biologically treated sewage effluent
* Flocculation with some polymerised flocculants
* Removal of nutrients by flocculation

Maximum contaminant level of nitrate as nitrogen (NO3-N) is 10 ppm for the safe drinking water

Above this cause a fatal blood disorders in infants-blue baby syndrome

Blue baby syndrome - reduction in oxygen carrying capacity of blood-skin and nail beds may develop bluish colour
Thank you