Checking for Water Contamination With the University of Manchester

Under the British Council's new program, the Newton Institutional Links, Swinburne Sarawak and the University of Manchester have been awarded a grant of RM 800,000 for the period of one year to set up a water quality monitoring system in Sarawak using a metal-oxide sensor.

Torrential Downpour in Sarawak © Ch'ien C.Lee

Dr. Ng (left) with his research team

The University of Manchester, UK, and Swinburne Sarawak will set up a new water monitoring system around Kuching to measure volatile organic compounds (VOC) in water. VOCs are hydrocarbon molecules of petroleum residues, pesticides, fuel oils, industrial waste, sewage, household products etc., which easily contaminates water and consuming that water can damage our central nervous system, kidneys or liver. This new system, a metal-oxide sensor based machine, records the water quality spectrum over drought and monsoon to see how the bacteria level fluctuates as the water level changes. With these data, an effective water treatment program can be developed attuned to the seasons.

Dr. SingMuk Ng explains, "what is unique about this sensor is that it can monitor water round the clock in a cost-effective manner instead of sending the water sample to the laboratory. The machine can be left on site and it transmits the data by email." The sensing principle is based on the oxidation of the VOCs which are exposed to the metal-oxide layer of the sensor at a high temperature. This system is also highly accurate and can differentiate among various VOCs simultaneously.

"While this project currently focuses on water, the metal oxide sensors can be easily adjusted for measuring VOCs on land and in the air. This can extend its application into different fields, like the continuous monitoring of pesticides. The pesticides can then be sprayed according to need instead of periodic spraying and can eliminate wastage in the agricultural sector" says Dr. Ng.