CHEM EURECA

"EXPLORING THE WORLD OF CHEMISTRY: IN THE LAB AND BEYOND"

NEWSLETTER

VOL.01, ISSUE:03 | DEPARTMENT OF CHEMISTRY | ST. JOSEPH VAZ COLLEGE, CORTALIM | JANUARY-MAY 2024

ANALYSIS OF WATER FROM THE LOCAL PONDS

Analyzing water from local ponds involves several steps and considerations to assess its quality. This is crucial for understanding the health of the aquatic ecosystem and its suitability for various uses, such as drinking, recreation, irrigation, or supporting wildlife.

Conducting a thorough analysis of water from local ponds involves a systematic approach to sample collection, parameter analysis, result interpretation, and reporting. This process helps in identifying potential issues, understanding the health of the aquatic ecosystem, and making informed decisions to protect and manage water resources effectively.

Under the guidance of *Dr. Melwin D'Souza, Assistant Professor in Chemistry*, the students of our institute analyzed numerous water samples for parameters such as Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), and pH.

CHROMATOGRAPHIC TECHNIQUES FOR IDENTIFICATION, PURIFICATION AND QUANTIFICATION

The students from the third year of B.Sc worked on Etoricoxib tablet to study the different Chromatographic techniques useful in different industrial sectors and compare the % Assay of different marketed drugs of Etoricoxib, and conclude the best Etoricoxib tablet in the market.

They concluded the following:

- The assay of Etoricoxib in Abbott is 97%, in Alembic, it is 97.37%, and in Etoshine, it is 97.53% of pure API.
- All the marketed tablets of Etoricoxib adhere to ICH guidelines.
- Etoshine has the highest percentage assay of API in the marketed Etoricoxib tablet.
- The new HPLC chromatographic conditions compared the retention time of the standard and sample, confirming the method's accuracy efficiently.

EXHIBITION ON HERBAL SOAPS

Herbal soaps offer a multitude of benefits, from promoting healthier skin to being environmentally friendly. Whether used for their calming, moisturizing, or therapeutic properties, these soaps cater to a growing demand for natural and sustainable skincare solutions. By choosing herbal soaps, individuals can enjoy a cleansing routine that supports both their skin's health and the environment.

As part of the entrepreneurship program, the Department of Chemistry organized an exhibition on 27 March 2024 showcasing a variety of herbal soaps. Numerous herbal soaps were displayed and made available for purchase by students, staff, and parents.

FOOD ADULTERATION IN SPICE MIXES

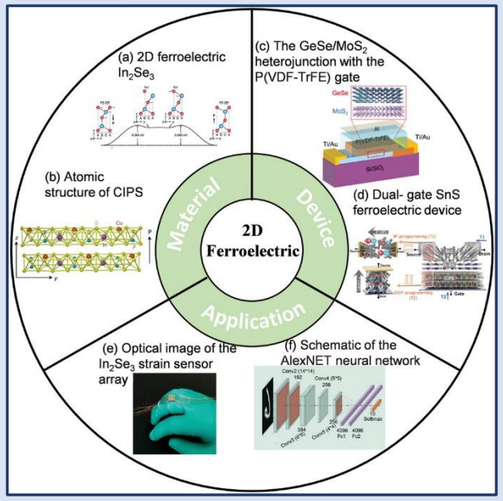
Spice mixes are essential for enhancing the flavor of savory dishes while also providing valuable nutrients. However, learning that packaged spices may have carcinogenic properties is concerning. In recent news, there have been reports of popular spice mixes allegedly containing carcinogenic pesticide ethylene oxide at levels exceeding permissible limits.

Ethylene oxide is classified as a Group 1 carcinogen by the International Agency for Research on Cancer. This poses serious health risks, including an elevated risk of breast cancer.

EMERGING 2D FERROELECTRIC DEVICES FOR IN-SENSOR AND IN-MEMORY COMPUTING

Emerging 2D ferroelectric materials hold significant promise for advanced in-sensor and in-memory computing applications. These materials exhibit spontaneous polarization that can be reversed by applying an external electric field, making them highly suitable for non-volatile memory and sensing technologies. Their unique properties enable the creation of energy-efficient, high-density, and multifunctional devices that are essential for the next generation of electronics.

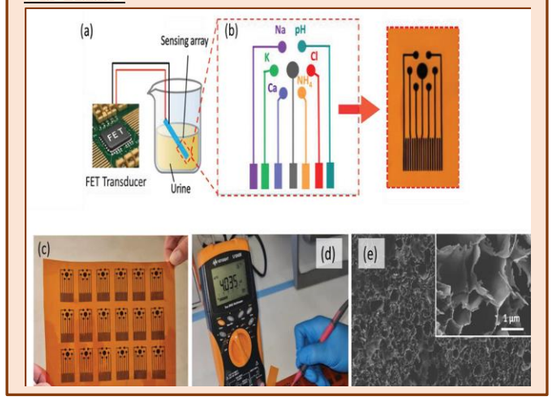
Reference: Chen, C., Zhou, Y., Tong, L., Pang, Y., & Xu, J. Emerging 2D Ferroelectric Devices for In-Sensor and In-Memory Computing. *Advanced Materials*, 2400332. https://doi.org/10.1002/adma.202400332



EXTENDED GATE TRANSISTOR-BASED MULTI-BIOMARKER SENSING PLATFORM FOR REAL-TIME URINE ANALYSIS

The Extended Gate Transistor-based Multi-biomarker Sensing Platform for real-time urine analysis stands at the forefront of diagnostic technology, offering a powerful tool for early disease detection and continuous health monitoring. By combining the advanced sensing capabilities of EGFETs with the convenience of urine sampling, this platform has the potential to revolutionize point-of-care diagnostics and personalized medicine. Continued advancements in material science, device engineering, and clinical validation will further enhance its efficacy and accessibility, paving the way for more widespread adoption in healthcare settings.

Reference: Panigrahi, D., Zheng, Y., Wang, J., Sublaban, M., & Haick, H. Extended Gate Transistor-based Multi-biomarker Sensing Platform for Real-time Urine Analysis. *Advanced Materials Technologies*, 2400329. https://doi.org/10.1002/admt.20240032



WHAT'S YOUR ELEMENT?

National Science Day reminds us of science's transformative power and critical role in advancing society. It celebrates the spirit of inquiry, innovation, and discovery, inspiring future generations to contribute to the ever-expanding frontiers of scientific knowledge.

On this occasion, Ms. Komal Gawade from the Department of Chemistry organized a competition named "In your elements present your Chemistry" for the third-year students of our institute. The students had to demonstrate a reaction from everyday life and explain the chemistry behind it.

THE CHEMISTRY OF THE DIFFERENT COLOURS OF BLOOD