

ANVESHANA

Inspiring Young Minds

By SRISHTI – BT FORUM

EVENTS

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- A workshop on “Biosensor and its Application” on 25/10/2017 was conducted for students of 3rd and 4th year .
- Five days Faculty Development Programme On “Application of Biosensors” was conducted on 22/1/2018 to 26/1/2018 in which our department faculties actively participated.

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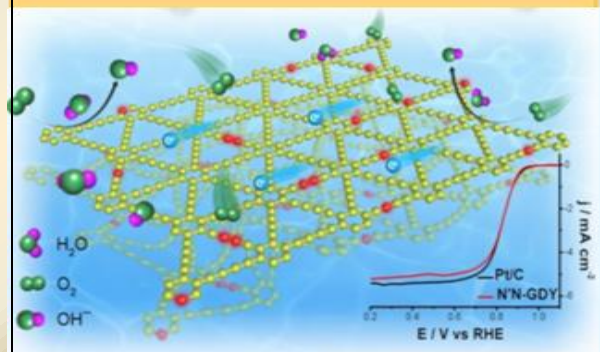
Back to basics

Compound Name	Structure of Compound and Functional Group (red)	Example	
		Formula	Name
alkene	$C=C$	C_2H_4 	ethene
alkyne	$C\equiv C$	C_2H_2 	ethyne
alcohol	$R-\ddot{O}-H$	CH_3CH_2OH 	ethanol
ether	$R-\ddot{O}-R'$	$(C_2H_5)_2O$ 	diethyl ether
aldehyde	$\begin{array}{c} :O: \\ \\ R-C-H \end{array}$	CH_3CHO 	ethanal
ketone	$\begin{array}{c} :O: \\ \\ R-C-R' \end{array}$	$CH_3COCH_2CH_3$ 	methyl ethyl ketone
carboxylic acid	$\begin{array}{c} :O: \\ \\ R-C-\ddot{O}-H \end{array}$	CH_3COOH 	acetic acid
ester	$\begin{array}{c} :O: \\ \\ R-C-\ddot{O}-R' \end{array}$	$CH_3CO_2CH_2CH_3$ 	ethyl acetate
amine	$\begin{array}{c} :N: \\ \\ R-N-H \\ \\ H \end{array} \quad \begin{array}{c} :N: \\ \\ R-N-H \\ \\ R' \end{array} \quad \begin{array}{c} :N: \\ \\ R-N-R'' \\ \\ R' \end{array}$	$C_2H_5NH_2$ 	ethylamine
amide	$\begin{array}{c} :O: \\ \\ R-C-\ddot{N}-R' \\ \\ H \end{array}$	CH_3CONH_2 	acetamide

PUBLICATIONS

- Soumya C, Y L Ramachandra “Physiological studies of Helminthosporium pathovars Isolated from Infected Maize Plant in the Region of Karnataka” International Journal of Science and Research.Vol.6(1),pp.516-524,2017.
- Usha, Talambedu; Pradhan, Sushen; Goyal, Arvind Kumar; Dhivya, Shanmugarajan; Prashanth Kumar HP; Singh, Manoj Kumar; Joshi, Neelu; Basistha, Bharat Chandra; Murthy, KR Siddalinga; Selvaraj, Saravanakumar; “Molecular simulation-based combinatorial modeling and antioxidant activities of zingiberaceae family rhizomes”, Pharmacog mag, 13(3), S715, 2017.
- Shasidhara K S , Usha rani S D, Vinitha N, Ananda S, Shobha G, “ Biodiesel Production from Simarouba Deoiled-Cake By Transesterification And Phytochemical Analysis”, International Journal Of Pharmacy And Biological Sciences, Vol 7, No 3, pp 36-42, 2017.

Articles



Nitrogen-Doped Porous Graphdiyne: A Highly Efficient Metal-Free Electrocatalyst for Oxygen Reduction Reaction

Metal-free catalysts for oxygen reduction reaction (ORR) are the desired materials for low-cost proton exchange membrane fuel cells. Graphdiyne (GDY), a novel type of two-dimensional carbon allotrope, is featured by its sp- and sp²-hybridized carbon atoms, different from the other existing carbon materials. Thus, nitrogen (N) can be doped in new styles by substituting sp-hybridized carbon atoms, effective for ORR, which has been displayed in this study using both experimental and theoretical technologies. The N-doped GDY was synthesized with pyridine and NH₃ as N sources successively, expressing an electrocatalytic activity at a potential above 0.8 V similar to that of commercial Pt/C for ORR in alkaline solution and higher stability and better methanol tolerance than those of Pt/C.

Saba.Anjum ,4th sem

REFERENCE -Research gate

Clotting Factors

- 01.F reshers Fibrinogen
- 02.P arty P rothrombin
- 03.T oday T hromboplastin
- 04.C ome on C alcium
- 05.L et's L abile factor
- 07.S ing S table factor
- 08.A nd A nti Haemophilic factor
- 09.C all the C hristmas factor
- 10.S eniors. S tuart prower factor
- 11.P lease P TA
- 12.H ave H aegeman factor
- 13.F un Fibrin stabilizing factor

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If you think about brewing, it is biotechnology. And I would say that I was a technologist at heart. So whether I... fermented beer or whether I fermented enzymes, the base technology was the same.

— Kiran Mazumdar-Shaw —

AZ QUOTES

Fluorescent Biosensors Based on Single-Molecule Counting

Biosensors for highly sensitive, selective, and rapid quantification of specific biomolecules make great contributions to biomedical research, especially molecular diagnostics. However, conventional methods for biomolecular assays often suffer from insufficient sensitivity and poor specificity. In some case (e.g., early disease diagnostics), the concentration of target biomolecules is too low to be detected by these routine approaches, and cumbersome procedures are needed to improve the detection sensitivity. Therefore, there is an urgent need for rapid and ultrasensitive analytical tools. In this respect, single-molecule fluorescence approaches may well satisfy the requirement and hold promising potential for the development of ultrasensitive biosensors. Encouragingly, owing to the advances in single-molecule microscopy and spectroscopy over past decades, the detection of single fluorescent molecule comes true, greatly boosting the development of highly sensitive biosensors. By in vitro/in vivo labeling of target biomolecules with proper fluorescent tags, the quantification of certain biomolecule at the single-molecule level is achieved. In comparison with conventional ensemble measurements, single-molecule detection-based analytical methods possess the advantages of ultrahigh sensitivity, good selectivity, rapid analysis time, and low sample consumption. Consequently, single-molecule detection may be potentially employed as an ideal analytical approach to quantify low-abundant biomolecules with rapidity and simplicity. In this Account, we will summarize our efforts for developing a series of ultrasensitive biosensors based on single-molecule counting. Single-molecule counting is a member of single-molecule detection technologies and may be used as a very simple and ultrasensitive method to quantify target molecules by simply counting the individual fluorescent bursts. In the fluorescent sensors, the signals of target biomolecules may be translated to the fluorescence signals by specific in vitro/in vivo fluorescent labeling, and consequently, the fluorescent molecules indicate the presence of target molecules. The resultant fluorescence signals may be simply counted by either microfluidic device-integrated confocal microscopy or total internal reflection fluorescence-based single-molecule imaging. We have developed a series of single-molecule counting-based biosensors which can be classified as separation-free and separation-assisted assays. As a proof-of-concept, we demonstrate the applications of single-molecule counting-based biosensors for sensitive detection of various target biomolecules such as DNAs, miRNAs, proteins, enzymes, and intact cells, which may function as the disease-related biomarkers. Moreover, we give a summary of future directions to expand the usability of single-molecule counting-based biosensors including (1) the development of more user-friendly and automated instruments, (2) the discovery of new fluorescent labels and labeling strategies, and (3) the introduction of new concepts for the design of novel biosensors. Due to their high sensitivity, good selectivity, rapidity, and simplicity, we believe that the single-molecule counting-based fluorescent biosensors will indubitably find wide applications in biological research, clinical diagnostics, and drug discovery.

-Harchitha A.C, 6th sem

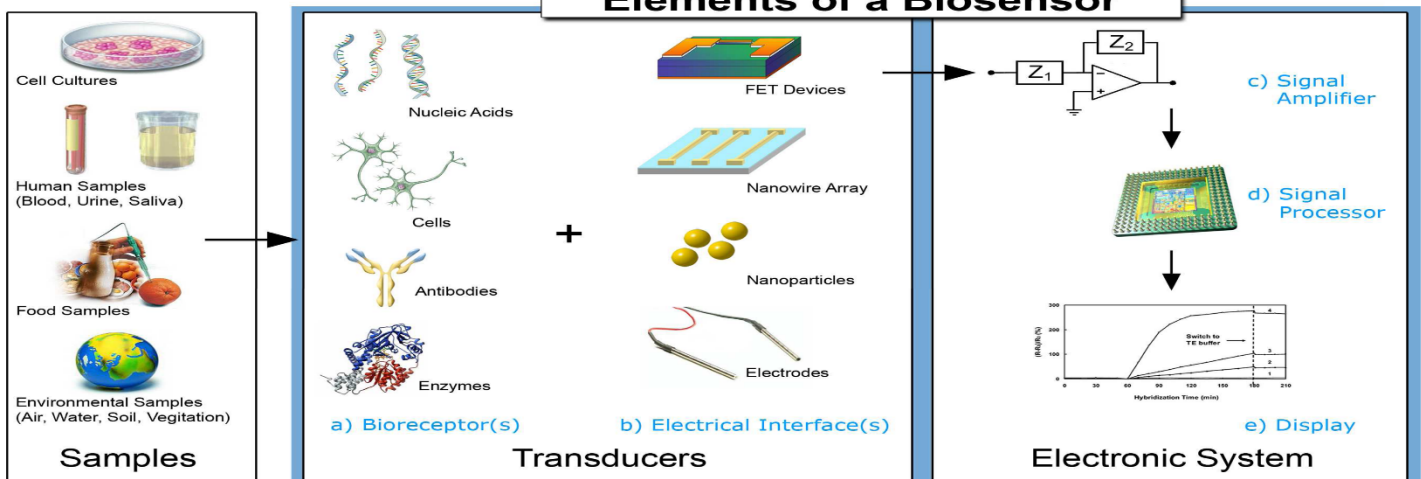
REFERENCE -SCIENCE DIRECT

INSTRUMENTS IDEAS

HOW IT WORKS ?

Biosensors are devices used to detect the presence or concentration of a biological analyte, such as a biomolecule, a biological structure or a microorganism. **Biosensors** consist of three parts: a component that recognizes the analyte and produces a signal, a signal transducer, and a reader device.

Elements of a Biosensor



PHOTOGRAPHY



PHOTOGRAPHY BY -Ananya.Nayak-4th sem, Ramya Janardhan-4th sem

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EDITOR'S DESK

WE ARE HAPPY TO SHARE THAT, OUR STUDENTS AND FACULTY MEMBERS ARE REGULARLY CONTRIBUTING ARTICLES (TECHNICAL AND NON- TECHNICAL), PHOTOS, PUZZLES, CROSS WORDS FOR THE DEPARTMENT NEWSLETTER - "ANVESHANA" WHICH ENRICHES THE STUDENT COMMUNITY WITH AWARENESS AND KNOWLEDGE ON RECENT TRENDS IN BIOTECHNOLOGY. ALSO, ITS A PLATFORM TO EXHIBIT THEIR EXTRACURRICULAR AND CO-CURRICULAR SKILLS.

ON BEHALF OF ANVESHANA'S EDITORIAL TEAM, I THANK ALL THE WRITERS, STUDENT EDITORS, OTHER CONTRIBUTORS FOR HELPING US IN BRINGING THIS ISSUE COLORFULLY.

PRASHANTH KUMAR H P
EDITOR-IN-CHIEF , ANVESHANA