农牧业信息化专题

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学术文献

1．An automated bacterial concentration and recovery system for pre-enrichment required in rapid Escherichia coli detection（一种用于快速大肠杆菌检测所需的预先富集的自动细菌浓缩和回收系统）

简介：One of the biggest challenges in rapid low concentration bacterial detection is the pre-concentration or pre-enrichment, which aims to increase bacteria concentration and reduce sample volume for easy bacterial detection. In practical bacterial detection, large-volume water samples with a pathogenic bacterial concentration of less than 1 CFU/mL have to be tested rapidly. The reported biosensors either have insufficient detection limit or have limited capability of handling a sufficiently large water sample. Therefore, a high-performance automated pre-enrichment process is strongly demanded in rapid practical bacterial detection. In this paper, a practical high performance automated bacterial concentration and recovery system (ABCRS) based on the combination of a ceramic membrane and tangential flow filtration technique was presented with short processing time (less than one hour), low pre-enrichment limit (<= 0.005 CFU/mL), high concentration ratio (>= 500), high recovery efficiency (similar to 90%), and small final retentate volume (<= 5 mL).

来源：SCIENTIFIC REPORTS

发布日期：2018-12-13

全文链接：

http://agri.ckcest.cn/file1/M00/06/5B/Csgk0Fw1W0mAPlzXABFqa0nqrVg057.pdf

2．On-the-go tropical soil sensing for pH determination using ion-selective electrodes（利用离子选择电极对热带土壤pH值进行实时监测）

简介：The objective of this work was to assess the performance of an antimony ion-selective electrode (ISE) sensor system, using manual and automatic operating modes, for measuring the potential of hydrogen (pH), in real time, in Oxisols with different characteristics. Samples were manually collected and sent to a laboratory for determination of pH in water and calcium chloride, whose values were used as references. Another set of samples was also automatically collected using a commercial equipment, and readings were performed in manual mode. The performance parameters of the sensor system were calculated and evaluated. Part of the soil samples was used to assess the degree of influence of moisture in determining pH. Calibration lines were constructed. The statistical analysis revealed better results for the manual mode. Both modes of operation had errors superior to those accepted as a limit in laboratory techniques, however, with the possibility of high data density and with positive and promising results. Soil moisture interfered with the result of the readings. The sensor system yields a sampling density of 45 data per hectare, which represents a great contribution to the intensification of data for a better spatial evaluation of soil information.

来源：PESQUISA AGROPECUARIA BRASILEIRA

3．Graphene and graphene oxide: Functionalization and nano-bio-catalytic system for enzyme immobilization and biotechnological perspective（石墨烯和氧化石墨烯：用于酶固定的功能化和纳米生物催化系统及生物技术展望）

简介：Graphene-based nanomaterials have gained high research interest in different fields related to proteins and thus are rapidly becoming the most widely investigated carbon-based materials. Their exceptional physiochemical properties such as electrical, optical, thermal and mechanical strength enable graphene to render graphene-based nanostructured materials suitable for applications in different fields such as electroanalytical chemistry, electrochemical sensors and immobilization of biomolecules and enzymes. The structural feature of oxygenated graphene, i.e., graphene oxide (GO) covered with different functionalities such as epoxy, hydroxyl, and carboxylic group, open a new direction of chemical modification of GO with desired properties. This review describes the recent progress related to the structural geometry, physiochemical characteristics, and functionalization of GO, and the development of graphene-based novel carriers as host for enzyme immobilization. Graphene derivatives-based applications are progressively increasing, in recent years. Therefore, from the bio-catalysis and biotransformation viewpoint, the biotechnological perspective of graphene-immobilized nano-bio-catalysts is of supreme interest. The structural geometry, unique properties, and functionalization of graphene derivatives and graphene-based nanomaterials as host for enzyme immobilization are highlighted in this review. Also, the role of GO-based catalytic systems such as microfluidic bio-catalysis, enzyme-based biofuel cells, and biosensors are also discussed with potential future perspectives of these multifaceted materials.

来源：INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES
发布日期：2018-09-24
全文链接：
http://agri.ckcest.cn/file1/M00/06/5B/Csgk0Fw1XBaAS6tkACWRxP0aSXQ414.pdf

4．Anodic stripping voltammetry: affordable and reliable alternative to inductively coupled plasma-based analytical methods（阳极溶出伏安法：可承受和可靠的替代电感耦合等离子体分析方法）

简介：Water is one of the main sources of metals income of the human body, and therefore, it is important to constantly monitor sources of drinking water to avoid adverse health risks. The natural concentration of metals in the water might vary. It depends on the metal concentration in the soil, the underlying geological structures, the acidity of water, its humus content, and particulate matter concentration. In the present study, direct determination of metals such as Mn, Zn, Cd, Pb, and Cu was carried out from surface and underground water using anodic stripping voltammetry at a hanging mercury drop electrode. The results from the

determination of metals using the studied method and inductively coupled plasma-atomic emission spectrometry for Mn, Zn, Cd, and Cu, and inductively coupled plasma-mass spectrometry for Pb were compared and found to be in good agreement.

来源：MONATSHEFTE FUR CHEMIE

发布日期：2018-02-12

全文链接：

http://agri.ckcest.cn/file1/M00/06/5B/Csgk0Fw1XOqALILcAA2GrttUYw0905.pdf

统 计 数 据

1．The Stocks of Pigs in the World（FAOSTAT, 2017）（2017年世界各个国家/地区生猪存栏量（FAOSTAT））

简介：FAO统计了2017年世界各个国家/地区生猪存栏量，部分数据见下表，全部数据请参见全文。

Area	Year	Value（head）	Note
China	2017	440,639,481	Aggregate, may include official, semi-official, estimated or calculated data
China, mainland	2017	435,037,100	Official data
United States of America	2017	73,414,900	Official data
Brazil	2017	41,099,460	Official data
Spain	2017	29,971,357	Official data
Germany	2017	27,577,568	Official data
Viet Nam	2017	27,406,739	Official data
Russian Federation	2017	22,027,698	Official data
Myanmar	2017	17,999,257	FAO data based on imputation methodology
Mexico	2017	17,210,269	Official data
Canada	2017	14,250,000	Official data

来源：FAOSTAT

发布日期：2018-12-20

全文链接：

http://agri.ckcest.cn/file1/M00/06/5B/Csgk0Fw1X6uAUx3mAAQ6qFMC-Mo087.pdf

2．2017年全国及各省生猪存栏量

简介：布瑞克农产品数据库公布了2017年全国及各省份的生猪存栏量（单位：万头），具体见表中数据。

年份 地区	2017年
全国	44158.9
北京	112.183
天津	179.952

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河北	1957.8
山西	544.111
内蒙古	505.6
辽宁	1308.02
吉林	911.098
黑龙江	1433.91
上海	111.24
江苏	1640.3
浙江	542.55
安徽	1417.2
福建	921.799
江西	1621.34
山东	3040.33
河南	4390
湖北	2578.53
湖南	3968.1
广东	2132.82
广西	2293.69
海南	399.6
重庆	1191.61
四川	4376.64
贵州	1596.89
云南	3029.18
西藏	42.29
陕西	854.424
甘肃	551.32
青海	82.68
宁夏	81.0351
新疆	342.682

来源：布瑞克农产品数据库;；中国畜牧业年鉴

发布日期:2018-11-06

全文链接：

http://agri.ckcest.cn/file1/M00/06/5B/CsgkOFw1YBaAYTwXAAISIhljPGk876.pdf