1. Separation Technology in Food Processing

Accession number: 20182705450926  
Authors: Shi, John (1); Xue, Sophia Jun (1); Ye, Xingqian (2); Jiang, Yueming (3); Ma, Ying (4); Li, Yanjun (5); Zheng, Xianzhe (6)  
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Source title: Food Biochemistry and Food Processing: Second Edition  
Abbreviated source title: Food Biochem. and Food Proces.: Second Ed.  
Issue date: April 26, 2012  
Publication year: 2012  
Pages: 764-784  
Language: English  
Document type: Book chapter (CH)  
Publisher: Wiley-Blackwell  
Number of references: 124  
Main heading: Processed foods  
Controlled terms: Chromatographic analysis - Food processing - Ion chromatography - Ion exchange - Membrane technology - Phase separation - Size exclusion chromatography  
Uncontrolled terms: Food components - Green processing - Ion exchange chromatography - Mechanical separation - Membrane based separation technologies - Scaling-up - Separation process - Separation technologies  
Classification code: 801 Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 822.2 Food Processing Operations - 822.3 Food Products - 951 Materials Science  
DOI: 10.1002/9781118308035.ch40  
Compendex references: YES  
Database: Compendex  
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Data Provider: Engineering Village

2. Insight into chloride effect on the UV/peroxymonosulfate process

Accession number: 20182805538382  
Authors: Guan, Ying-Hong (1); Ma, Jun (2); Liu, Deng-Ke (1); Ou, Zhao-fan (1); Zhang, Wei-qi (3); Gong, Xing-Long (1); Fu, Qiang (1); Crittenden, John C. (3)  
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Corresponding author: Guan, Ying-Hong(guanyinghong@neau.edu.cn)  
Source title: Chemical Engineering Journal  
Abbreviated source title: Chem. Eng. J.  
Volume: 352  
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Publication year: 2018  
Pages: 477-489  
Language: English  
ISSN: 13858947  
CODEN: CMEJAJ  
Document type: Journal article (JA)  
Publisher: Elsevier B.V.  
Abstract: In this study, we examined chloride impact on UV/peroxymonosulfate (UV/PMS) process with benzoate acid (BA) and chloroform (TCM) as target compounds, which react rapidly and slowly with HO[rad] and SO4[rad]-, respectively. The chloride impact on UV/PMS process in simulated real water (mixture of nitrate, carbonates, natural organic matter (NOM) and chloride) was analyzed based on the individual impact of anions and NOM. Pseudo steady-
state and dynamic kinetic models were developed to calculate radical concentrations and determine the roles of water matrix in BA and TCM degradation. Radical conversion and radical selectivity were proposed to be quantified by radical termination rate and radical participation ratio (RPR). The latter one indicated the radical participation between target compound and other radical termination species coexisted. Chloride stimulating or inhibiting target compound destruction, due to radical conversion induced by chloride concentration variation, was deduced to depend on the RPR difference of conversion radicals. Nitrate affected target compound destruction rate by two aspects, radical conversion (similar to the role of chloride) and total photoproduction rate of HO[rad] and SO4[rad]-. The total photoproduction rate of radicals showed a PMS-concentration involved dependence on nitrate concentration. Nitrate enhanced total photoproduction rate at low PMS concentration and reduced the rate at high PMS concentration. In simulated real water, carbonates played the key role in radical conversion and RPR. The coexistence of carbonates and chloride converted most SO4[rad]- into Cl2[rad]- and Cl[rad], leading to an obvious inhibition of chloride on BA degradation. © 2018 Elsevier B.V.

Number of references: 47
Main heading: Chlorine compounds
Controlled terms: Biological materials - Carbonates - Nitrates - Sulfur compounds
Uncontrolled terms: Chloride - Chloride concentrations - Hydroxyl radicals - Natural organic matters - Nitrate concentration - Peroxymonosulfate - Radical concentration - Sulfate radicals
Classification code: 461.2 Biological Materials and Tissue Engineering - 804.2 Inorganic Compounds
DOI: 10.1016/j.cej.2018.07.027
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Compendex references: YES
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3. A naphthalene-quinoline based chemosensor for fluorescent “turn-on” and absorbance-ratiometric detection of Al3+ and its application in cells imaging

Accession number: 20182905563431
Authors: Zeng, Shuang (1); Li, Shi-Jie (2); Sun, Xue-Jiao (1); Li, Ming-Qiang (1); Ma, Yu-Qing (1); Xing, Zhi-Yong (1); Li, Jin-Long (3)
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Corresponding author: Xing, Zhi-Yong(zyxing@neau.edu.cn)
Source title: Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy
Volume: 205
Issue date: 5 December 2018
Publication year: 2018
Pages: 276-286
Language: English
ISSN: 13861425
CODEN: SAMCAS
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: A new naphthalene-quinoline based chemosensor L was prepared and structurally characterized. L exhibited excellent selectivity and sensitivity to Al3+ through distinct fluorescence enhancement (335-fold) and ratiometric detection in DMF/H2O (v/v, 1/9) based on the combined mechanisms of ESIP and CHEF. The recognizing behavior of L toward Al3+ had been investigated in detail through Job’s Plot, FT-IR, HNMR, and HRMS analysis. The limit of detection (LOD) for Al3+ was as low as and 3.67 × 10-8 M. L was successfully applied in real sample detection and construction of molecular logic gate. Moreover, L was verified to be of low cytotoxicity and good imaging characteristics for the detection of Al3+ in cells HSC. © 2018 Elsevier B.V.
Number of references: 45
Main heading: Naphthalene
Controlled terms: Fluorescence - Physiology
Uncontrolled terms: Chemosensor - Fluorescence enhancement - Imaging characteristics - Molecular logic gates - Quinoline - Ratiometric - Ratiometric detection - Selectivity and sensitivity
Classification code: 461.9 Biology - 741.1 Light/Optics - 804.1 Organic Compounds
DOI: 10.1016/j.saa.2018.07.039
4. Effect of solar irradiance on photo biochemical transformation process of direct absorption methane digester

**Accession number:** 20182905547362  
**Authors:** Liu, Changyu (1, 2); Sun, Yong (1); Yang, Fuli (1); Liu, Jinming (1)  
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**Source title:** Energy Conversion and Management  
**Abbreviated source title:** Energy Convers. Manage.  
**Volume:** 172  
**Issue date:** 15 September 2018  
**Publication year:** 2018  
**Pages:** 173-181  
**Language:** English  
**ISSN:** 01968904  
**CODEN:** ECMADL  
**Document type:** Journal article (JA)  
**Publisher:** Elsevier Ltd  
**Abstract:** Direct absorption methane digester can accomplish the coupled process of solar heat collection and photo and biochemical reaction of microorganisms simultaneously. In present work, a numerical model was developed to determine a tool to investigate the photo biochemical transformation process for developing engineering analyses, which is a coupled one of the simplified ADM1 model and the heat and mass transfer model. The model was validated by experimental data from two groups of different experiments. The effect of solar irradiance on the photo biochemical transformation process was also investigated by the model. The results show that a good agreement has been obtained between experimental data and simulations, which can be achieved in most of time. The study found that increasing solar irradiance is an effective method to improve the biogas production rate of direct absorption methane digester. With the solar irradiance increasing, the volume average temperature increases and the rates of biogas production, substrate reaction and total propionate all turn bigger. The effect of solar irradiance on biogas production rate is bigger than the one on the rate of propionic acid. In order to increase the heat storage of digester, the slurry surface evaporation of digester should be restrained. © 2018  
**Number of references:** 36  
**Main heading:** Image processing  
**Controlled terms:** Biogas - Digital storage - Heat storage - Heat transfer - Mass transfer - Methane - Propionic acid - Reaction rates - Solar radiation - Substrates  
**Uncontrolled terms:** Anaerobic fermentation - Biochemical reactions - Biochemical transformation - Biogas production rates - Coupled heat and mass transfer - Direct absorption - Engineering analysis - Heat and mass transfer models  
**DOI:** 10.1016/j.enconman.2018.07.026  
**Compendex references:** YES  
**Database:** Compendex  
**Compilation and indexing terms, Copyright 2018 Elsevier Inc.**  
**Data Provider:** Engineering Village

5. HHM- and RFRM-Based Water Resource System Risk Identification

**Accession number:** 20182905555156  
**Authors:** Jiang, Qiuxiang (1); Wang, Tian (1); Wang, Zilong (1); Fu, Qiang (1); Zhou, Zhimei (1); Zhao, Youzhu (1); Dong, Yujie (1)  
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**Corresponding author:** Wang, Zilong(wangzilong2017@126.com)  
**Source title:** Water Resources Management
Abstract: In water resource system risk research, the risk identification problem should be addressed first, due to its significant impact on risk evaluation and management. Conventional risk identification methods are static and one-sided and are likely to induce problems such as ignored risk sources and ambiguous relationships among subsystems. Hierarchical holographic modelling (HHM) and Risk filtering, ranking, and management (RFRM) were employed to identify the risk of water resources system. Firstly, water resource systems are divided into 11 major hierarchies and 39 graded holographic sub-subsystems by using the HHM framework. Iteration was applied on 4 graded holographic sub-subsystems, which were decomposed from water resource system in the time-space domain, to accurately identify 30 initial scenarios. Then, on the basis of RFRM theory, the risk probabilities of the initial scenarios are calculated and ranked, and 13 high risk scenarios are identified. Finally, the quantifiable 33 risk indicators that characterize the risk scenario are presented. Research results show that the risks affecting the water resources system include the composition, quantity, quality, and management of water resources, which involve many factors such as hydrology, human resources, resource allocation, and safety. Additionally, the study gives quantitative indicators for responding to high-risk scenarios to ensure that high-risk scenarios are addressed first, which is significant for the subsequent evaluation and management of water resource system risk. © 2018 Springer Nature B.V.

Main heading: Risk management

Controlled terms: Holography - Human resource management - Iterative methods - Risk assessment - Risk perception - Water management

Uncontrolled terms: Quantitative indicators - Ranking - Risk filters - Risk Identification - Risk probabilities - Time-space domains - Water resource systems - Water resources systems

Classification code: 743 Holography - 746 Imaging Techniques - 912.2 Management - 914.1 Accidents and Accident Prevention - 921.6 Numerical Methods

DOI: 10.1007/s11269-018-2037-y

Database: Compendex

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Data Provider: Engineering Village

6. High-throughput fabrication of porous carbon by chemical foaming strategy for high performance supercapacitor

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Authors: Ouyang, Tian (1); Zhang, Tianyu (1); Wang, Huizhong (2); Yang, Fan (3); Yan, Jun (1); Zhu, Kai (1); Ye, Ke (1); Wang, Guiling (1); Zhou, Limin (2); Cheng, Kui (1, 2); Cao, Dianxue (1)

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Corresponding author: Cheng, Kui(chengkui@hrbeu.edu.cn)

Source title: Chemical Engineering Journal

Abbreviated source title: Chem. Eng. J.

Volume: 352

Issue date: 15 November 2018

Publication year: 2018

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CODEN: CMEMJAJ

Document type: Journal article (JA)

Publisher: Elsevier B.V.

Abstract: Inspired by people to make flour food, a one-pot, low-cost, green and environmental friendly gas foaming strategy is adopted here to prepare the three-dimensional hierarchical porous carbon (HPC) by introducing NaHCO3
as foaming and activation agent. During the pyrolysis process, the CO2 gas produced during the transforms from NaHCO3 into Na2CO3 will result in the producers of the macro-pores and meso-pores, meanwhile, the as-produced Na2CO3 further react with the carbon intermediate at a high temperature, and finally result in forming a micro-pores porous structure. Such intimate structural interconnectivities provide three-dimensional continuous pathway for electron rapid transfer and the interconnected pores allow for the ion to penetrate and evenly contact the electrode material quickly. The electrochemical performance of HPC exhibits a high specific capacitance of 350 F g\(^{-1}\) at 1 A g\(^{-1}\) and outstanding electrochemical stability with capacitance retention up to 97% after 10,000 cycles. Moreover, the as-assembled symmetric supercapacitor exhibits an ultrahigh energy density of 27.4 Wh kg\(^{-1}\), much higher than most of carbon-based supercapacitors. These results demonstrate a straightforward environment friendly method to mass-produce economical, robust carbon materials as promising candidates for supercapacitor application. © 2018 Elsevier B.V.

7. Experimental determination of the coefficient of restitution of particle-particle collision for frozen maize grains

Accession number: 20182905573047
Authors: Wang, Lijun (1); Wu, Baoxin (1); Wu, Zhenchao (1); Li, Rui (1); Feng, Xin (1)
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Source title: Powder Technology
Abbreviated source title: Powder Technol.
Volume: 338
Issue date: October 2018
Publication year: 2018
Pages: 263-273
Language: English
ISSN: 00325910
E-ISSN: 1873328X
CODEN: POTEBX
Document type: Journal article (JA)
Publisher: Elsevier B.V.
Abstract: There are many frozen maize produced in the fall due to early frost every year. Coefficient of restitution (CoR) is one of the microscopic physical properties required to simulate the motion of maize grains in seeding and harvesting machines using EDEM software. In this study, the CoR of particle-particle collision involving frozen maize grains was determined by using a function derived based on the grain velocities in the direction of the contact force of the particle-particle collision. The real densities of different parts of the frozen maize grain were determined by experiments. The external outlines of the grain and embryo were obtained by image processing and fitted to different functions. Three-dimensional models were established by using the built-in functions available in SolidWorks software. An automatic control platform was designed and constructed to realize the particle-particle collision without external interference and measure the CoRs. The mechanical behavior of the frozen maize grain was traced by using a high-speed digital video camera. The grain centroid was determined based on the densities of different parts of the frozen maize grain by using SolidWorks software. The effects of the moisture content, impact velocity, impact angle and...
impact position on the CoR of the particle-particle collision were also investigated in this study. This paper presents a method to determine the CoR of the particle-particle collision in three dimensions. The results will be helpful for maize simulation and for the design of machines. © 2018 Elsevier B.V.

**Number of references:** 31

**Main heading:** Video cameras

**Controlled terms:** Automation - Computer graphics - High speed cameras - Image processing - Multimedia systems

**Uncontrolled terms:** Centroid - Coefficient of restitution - Experimental determination - Experimental testing - Frozen maize - High-speed digital video cameras - Particle particle collisions - Three-dimensional model

**Classification code:** 723.5 Computer Applications - 731 Automatic Control Principles and Applications - 742.2 Photographic Equipment

**DOI:** 10.1016/j.powtec.2018.07.005

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