Bacterial cells with improved tolerance to isobutyric acid

Bacterial cells genetically modified to improve their tolerance to certain commodity chemicals, such as isobutyric acid and related compounds, and methods of preparing and using such bacterial cells for production of isobutyric acid and related compounds.

General information
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, Research Groups, iLoop, Bacterial Cell Factory Optimization, Global Econometric Modeling, Department of Biotechnology and Biomedicine, Bacterial Synthetic Biology, ALE Technology & Software Development
Authors: Lennen, R. (Intern), Nielsen, A. T. (Intern), Herrgård, M. (Intern), Sommer, M. O. A. (Intern), Feist, A. (Intern), Mohamed, E. T. T. (Intern)
Publication date: 16 Nov 2017

Publication information
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Date: 16/11/2017
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Priority number: EP20160173673
Original language: English
Main Research Area: Technical/natural sciences
Source: espacenet
Source-ID: WO2017194696
Publication: Research › Patent – Annual report year: 2017

Engineered mammalian cells for production of recombinant proteins

The present invention relates to mammalian cells modified to provide for improved expression of a recombinant protein of interest. In particular, the invention relates to CHO cells and other host cells in which the expression of one or more endogenous secreted proteins has been disrupted, as well as to the preparation, identification and use of such cells in the production of recombinant proteins.

General information
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, CHO Core, iLoop
Authors: Voldborg, B. G. (Intern), Pedersen, L. E. (Intern)
Publication date: 2 Nov 2017

Publication information
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Patent number: WO2017186671
Date: 02/11/2017
Priority date: 25/04/2016
Priority number: EP20160166789
Original language: English
Main Research Area: Technical/natural sciences
Source: espacenet
Source-ID: WO2017186671
Publication: Research › Patent – Annual report year: 2017

The accountability imperative for quantifying the uncertainty of emission forecasts: evidence from Mexico

© 2017 Informa UK Limited, trading as Taylor & Francis Group Governmental climate change mitigation targets are typically developed with the aid of forecasts of greenhouse-gas (GHG) emissions. The robustness and credibility of such forecasts depends, among other issues, on the extent to which forecasting approaches can reflect prevailing uncertainties. We apply a transparent and replicable method to quantify the uncertainty associated with projections of gross domestic product growth rates for Mexico, a key driver of GHG emissions in the country. We use those projections to produce probabilistic forecasts of GHG emissions for Mexico. We contrast our probabilistic forecasts with Mexico’s governmental deterministic forecasts. We show that, because they fail to reflect such key uncertainty, deterministic forecasts are ill-suited for use in target-setting processes. We argue that (i) guidelines should be agreed upon, to ensure that governmental forecasts meet certain minimum transparency and quality standards, and (ii) governments should be held...
accountable for the appropriateness of the forecasting approach applied to prepare governmental forecasts, especially when those forecasts are used to derive climate change mitigation targets. POLICY INSIGHTS No minimum transparency and quality standards exist to guide the development of GHG emission scenario forecasts, not even when these forecasts are used to set national climate change mitigation targets. No accountability mechanisms appear to be in place at the national level to ensure that national governments rely on scientifically sound processes to develop GHG emission scenarios. Using probabilistic forecasts to underpin emission reduction targets represents a scientifically sound option for reflecting in the target the uncertainty to which those forecasts are subject, thus increasing the validity of the target. Setting up minimum transparency and quality standards, and holding governments accountable for their choice of forecasting methods could lead to more robust emission reduction targets nationally and, by extension, internationally.
**High throughput in vivo protease inhibitor selection platform**

The invention relates to a recombinant microbial cell comprising a selection platform for screening for a protease inhibitor, wherein the platform comprises transgenes encoding a protease having selective peptide bond cleavage activity at a recognition site amino acid sequence; and transgenes encoding polypeptides conferring resistance to microbial growth inhibitors; wherein the polypeptides comprise the recognition site amino acid sequence cleavable by the protease. Protease inhibitors are detected by their ability to inhibit protease specific cleavage and inactivation of the polypeptides whose activity is required for conferring resistance to the microbial growth inhibitors. The invention further relates to recombinant microbial host cell libraries of metagenomic DNA that further comprise the selection platform; and the use of a recombinant microbial cell comprising the selection platform for screening for a protease inhibitor.

**General information**

State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, Department of Biotechnology and Biomedicine, Bacterial Synthetic Biology
Authors: Van Der Helm, E. (Intern), Sommer, M. (Intern)
Publication date: 2 Nov 2017

**Publication information**

IPC: C12Q 1/37 A I
Patent number: WO2017186854
Date: 02/11/2017
Priority date: 27/04/2016
Priority number: EP20160167213
Original language: English
Main Research Area: Technical/natural sciences
Source: espacenet
Publication: Research › Patent – Annual report year: 2017

**Design optimization of offshore wind farms with multiple types of wind turbines**

Most studies on offshore wind farm design assume a uniform wind farm, which consists of an identical type of wind turbines. In order to further reduce the cost of energy, we investigate the design of non-uniform offshore wind farms, i.e., wind farms with multiple types of wind turbines and hub-heights. Given a set of different types of wind turbines with a different default hub height for each type, we can specify the design of a wind farm by the types of turbines, number of turbines for each type, and turbine locations. We consider the optimization of such design to minimize the leveled cost of energy, which is calculated using a capital cost model that covers the turbine cost and the balance of plant cost. An empirical wind turbine design cost and scaling model is utilized to model the cost of turbines with different sizes. Constraints on wind farm boundary, wind turbine proximity and total capacity are also included. We solve the problem with a newly developed extended random search algorithm and tested it in a realistic design optimization problem based on the Horns Rev 1 offshore wind farm in Denmark. The optimized non-uniform designs are compared with their uniform counterparts. We find that a non-uniform design can achieve a lower leveled cost of energy than its uniform counterparts, when the capital cost per MW is slightly lower for the smaller size turbine. Comparison with the mixed-discrete particle swarm optimization algorithm is also carried out for a non-uniform wind farm design problem with a fixed number of turbines, which shows the effectiveness and superiority of the proposed algorithm. Finally, the advantages and possible disadvantages of non-uniform design are also identified and discussed.

**General information**

State: Published
Organisations: Department of Wind Energy, Technical University of Denmark, Fluid Mechanics
Authors: Feng, J. (Intern), Shen, W. Z. (Intern)
Pages: 1283-1297
Publication date: 1 Nov 2017
Main Research Area: Technical/natural sciences
Corticomuscular coherence in the acute and subacute phase after stroke

Objective Stroke is one of the leading causes of physical disability due to damage of the motor cortex or the corticospinal tract. In the present study we set out to investigate the role of adaptations in the corticospinal pathway for motor recovery during the subacute phase after stroke. Methods We examined 19 patients with clinically diagnosed stroke and 18 controls. The patients had unilateral mild to moderate weakness of the hand. Each patient attended two sessions at approximately 3 days (acute) and 38 days post stroke (subacute). Task-related changes in the communication between motor cortex and muscles were evaluated from coupling in the frequency domain between EEG and EMG during movement of the paretic hand. Results Corticomuscular coherence (CMC) and intermuscular coherence (IMC) were reduced in patients as compared to controls. Paretic hand motor performance improved within 4–6 weeks after stroke, but no change was observed in CMC or IMC. Conclusions CMC and IMC were reduced in patients in the early phase after stroke. However, changes in coherence do not appear to be an efficient marker for early recovery of hand function following stroke. Significance This is the first study to demonstrate sustained reduced coherence in acute and subacute stroke.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Image Analysis & Computer Graphics, University of Copenhagen
Authors: Larsen, L. H. (Ekstern), Zibrandtsen, I. C. (Ekstern), Wienecke, T. (Ekstern), Kjaer, T. W. (Ekstern), Christensen, M. S. (Intern), Nielsen, J. B. (Ekstern), Langberg, H. (Ekstern)
Pages: 2217-2226
Publication date: 1 Nov 2017
Main Research Area: Technical/natural sciences

Publication information
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BFI (2016): BFI-level 1
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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.395 SNIP 1.505 CiteScore 2.72
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.572 SNIP 0.437 CiteScore 2.61
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.122 SNIP 1.468 CiteScore 3
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.168 SNIP 0.302 CiteScore 3.03
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.133 SNIP 0.366 CiteScore 3.35
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.102 SNIP 0.011
Web of Science (2010): Indexed yes
Online short-term forecast of greenhouse heat load using a weather forecast service

In some district heating systems, greenhouses represent a significant share of the total load, and can lead to operational challenges. Short term load forecast of such consumers has a strong potential to contribute to the improvement of the overall system efficiency. This work investigates the performance of recursive least squares for predicting the heat load of individual greenhouses in an online manner. Predictor inputs (weekly curves terms and weather forecast inputs) are selected in an automated manner using a forward selection approach. Historical load measurements from 5 Danish greenhouses with different operational characteristics were used, together with weather measurements and a weather forecast service. It was found that these predictors of reduced complexity and computational load performed well at capturing recurring load profiles, but not fast frequency random changes. Overall, the root mean square error of the prediction was within 8–20% of the peak load for the set of consumers over the 8 months period considered.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Dynamical Systems, Aalborg University
Authors: Vogler-Finck, P. J. (Ekstern), Bacher, P. (Intern), Madsen, H. (Intern)
Pages: 1298-1310
Publication date: 1 Nov 2017
Main Research Area: Technical/natural sciences

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Journal: Applied Energy
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Ratings:
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Scopus rating (2016): CiteScore 7.78 SJR 3.058 SNIP 2.573
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.912 SNIP 2.61 CiteScore 6.4
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 3.254 SNIP 3.28 CiteScore 6.93
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Novel Levenberg–Marquardt based learning algorithm for unmanned aerial vehicles

In this paper, Levenberg–Marquardt inspired sliding mode control theory based adaptation laws are proposed to train an intelligent fuzzy neural network controller for a quadrotor aircraft. The proposed controller is used to control and stabilize a quadrotor unmanned aerial vehicle in the presence of periodic wind gust. A proportional-derivative controller is firstly introduced based on which fuzzy neural network is able to learn the quadrotor's control model on-line. The proposed design allows handling uncertainties and lack of modelling at a computationally inexpensive cost. The parameter update rules of the learning algorithms are derived based on a Levenberg–Marquardt inspired approach, and the proof of the stability of two proposed control laws are verified by using the Lyapunov stability theory. In order to evaluate the performance of the proposed controllers extensive simulations and real-time experiments are conducted. The 3D trajectory tracking problem for a quadrotor is considered in the presence of time-varying wind conditions.

General information
State: Published
Organisations: Nanyang Technological University, Semnan University, University of Essex
Authors: Sarabakha, A. (Ekstern), Imanberdiyev, N. (Ekstern), Kayacan, E. (Ekstern), Khanesar, M. A. (Intern), Hagras, H. (Ekstern)
CRYSTAL STRUCTURE OF HUMAN DOPAMINE BETA-HYDROXYLASE
A crystalline form of dopamine β-hydroxylase is provided. X-ray crystallography reveals the space group and cell dimensions, as well as the atomic coordinates. The information can be used for identifying one or more modulators of...
dopamine β-hydroxylase, which can then be chemically synthesised and used in treatment. A process for preparing the crystalline form of human dopamine β-hydroxylase is also provided.

**General information**
State: Published
Organisations: Department of Chemistry, Metalloprotein Chemistry and Engineering, Københavns Universitet
Authors: Harris, P. H. (Forskerdatabase), Christensen, H. E. M. (Intern), Vendelboe, T. V. (Intern)
Publication date: 12 Oct 2017

**Publication information**
IPC: C12N 9/02 A I
Patent number: WO2017174762
Date: 12/10/2017
Priority date: 07/04/2016
Priority number: EP20160164227
Original language: English
Main Research Area: Technical/natural sciences
Source: espacenet
Source-ID: WO2017174762
Publication: Research › Patent – Annual report year: 2017

Optimized microbial cells for production of melatonin and other compounds
Described herein are recombinant microbial host cells comprising biosynthetic pathways and their use in producing oxidation products and downstream products, e.g., melatonin and related compounds, as well as enzyme variants, nucleic acids, vectors and methods useful for preparing and using such cells. In specific aspects, the present invention relates to monooxygenases, e.g., amino acid hydroxylases, with a modified cofactor-dependency, and to enzyme variants and microbial cells providing for an improved supply of cofactors.

**General information**
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, iLoop, Department of Systems Biology
Authors: Luo, H. (Intern), Förster, J. (Intern)
Publication date: 5 Oct 2017

**Publication information**
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Date: 05/10/2017
Priority date: 19/05/2016
Priority number: EP20160170405
Original language: English
Main Research Area: Technical/natural sciences
Source: espacenet
Source-ID: WO2017167866
Publication: Research › Patent – Annual report year: 2017

Robotic system and method for manufacturing of objects
The present disclosure relates to a method and a system for manufacturing a mould (17) for creation of complex objects, such as concrete objects, by controlling and moving two end effectors (1) of a robotic system, the two end effectors (1) having a flexible cutting element (3) attached to and extending between the two end effectors (1), the method comprising the steps of: defining at least one surface (8) representing the inner surface of the mould (17); dividing the surface (8) into a number of segments represented by planar curves (9, 11, 12) on the surface (8); for each planar curve, calculating at least one elastic curve representing the planar curve; for each calculated elastic curve, calculating a set of data corresponding to placement and direction of the two end effectors (1) for configuring the flexible cutting element to a shape corresponding to the calculated elastic curve; sequentially positioning the end effectors (1) according to each set of data.

**General information**
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Mathematics
Authors: Gravesen, J. (Intern), Brander, D. (Intern), Bærentzen, J. A. (Ekstern), Markvorsen, S. (Intern), Bjerge Nørbjerg, T. (Intern), Hornbak Steenstrup, K. (Intern)
**Advanced fabrication of hyperbolic metamaterials**

Hyperbolic metamaterials can provide unprecedented properties in accommodation of high-k (high wave vector) waves and enhancement of the optical density of states. To reach such performance the metamaterials have to be fabricated with as small imperfections as possible. Here we report on our advances in two approaches in fabrication of optical metamaterials. We deposit ultrathin ultrasmooth gold layers with the assistance of organic material (APTM) adhesion layer. The technology supports the stacking of such layers in a multiperiod construction with alumina spacers between gold films, which is expected to exhibit hyperbolic properties in the visible range. As the second approach we apply the atomic layer deposition technique to arrange vertical alignment of layers or pillars of heavily doped ZnO or TiN, which enables us to produce hyperbolic metamaterials for the near- and mid-infrared ranges.

**General information**

State: Published
Organisations: Department of Photonics Engineering, Plasmonics and Metamaterials, DTU Danchip
Authors: Shkondin, E. (Intern), Sukham, J. (Intern), Panah, M. E. A. (Intern), Takayama, O. (Intern), Malureanu, R. (Intern), Jensen, F. (Intern), Lavrinenko, A. (Intern)
Number of pages: 4
Publication date: 14 Sep 2017

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Source: Scopus
Source-ID: 85030633939
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

**Experimental Comparison of Probabilistic Shaping Methods for Unrepeated Fiber Transmission**

This paper studies the impact of probabilistic shaping on effective signal-to-noise ratios (SNRs) and achievable information rates (AIRs) in a back-to-back configuration and in unrepeated nonlinear fiber transmissions. For back-to-back, various shaped quadrature amplitude modulation (QAM) distributions are found to have the same implementation penalty as uniform input. By demonstrating in transmission experiments that shaped QAM input leads to lower effective SNR than uniform input at a fixed average launch power, we experimentally confirm that shaping enhances the fiber nonlinearities. However, shaping is ultimately found to increase the AIR, which is the most relevant figure of merit as it is directly related to spectral efficiency. In a detailed study of these shaping gains for the nonlinear fiber channel, four strategies for optimizing QAM input distributions are evaluated and experimentally compared in wavelength division multiplexing (WDM) systems. The first shaping scheme generates a Maxwell-Boltzmann (MB) distribution based on a linear additive white
Gaussian noise channel. The second strategy uses the Blahut-Arimoto algorithm to optimize an unconstrained QAM distribution for a split-step Fourier method based channel model. In the third and fourth approach, MB-shaped QAM and unconstrained QAM are optimized via the enhanced Gaussian noise (EGN) model. Although the absolute shaping gains are found to be relatively small, the relative improvements by EGN-optimized unconstrained distributions over linear AWGN optimized MB distributions are up to 59%. This general behavior is observed in 9-channel and fully loaded WDM experiments.

General information
State: Accepted/In press
Organisations: Department of Photonics Engineering, Coding and Visual Communication, High-Speed Optical Communication, Centre of Excellence for Silicon Photonics for Optical Communications, Eindhoven University of Technology, Technische Universitat Munchen
Authors: Renner, J. (Ekstern), Fehenberger, T. (Ekstern), Yankov, M. P. (Intern), Da Ros, F. (Intern), Forchhammer, S. (Intern), Bocherer, G. (Ekstern), Hanik, N. (Ekstern)
Number of pages: 9
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Main Research Area: Technical/natural sciences

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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.689 SNIP 1.955 CiteScore 4.15
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.801 SNIP 2.423 CiteScore 4.23
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.533 SNIP 2.341 CiteScore 4.03
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.711 SNIP 2.335 CiteScore 3.21
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.605 SNIP 2.758 CiteScore 3.2
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.802 SNIP 2.411
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.312 SNIP 2.761
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.371 SNIP 2.423
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.467 SNIP 2.114
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 2.149 SNIP 2.603
Phase retrieval is a powerful numerical method that can be used to determine the wavefront of laser beams based only on intensity measurements, without the use of expensive, low-resolution specialized wavefront sensors such as Shack–Hartmann sensors. However, phase retrieval techniques generally suffer from poor convergence and fidelity when the input measurements contain electronic or optical noise and/or an incoherent intensity contribution overlapped with the otherwise spatially coherent laser beam. Here, we present an implementation of a modified version of the standard multiple-plane Gerchberg–Saxton algorithm and demonstrate that it is highly successful at extracting the intensity profile and wavefront of the spatially coherent part of the light from various lasers, including tapered laser diodes, at a very high fidelity despite the presence of incoherent light and noise.
A device for concentration of nanoparticles and/or microparticles in liquid flow conditions by dielectrophoresis is disclosed in this invention.

General information
State: Published
Organisations: Department of Micro- and Nanotechnology, Nano Bio Integrated Systems
Authors: Rozlosnik, N. (Intern), Dimaki, M. (Intern), Olsen, M. H. (Ekstern), Svendsen, W. E. (Intern)
Publication date: 8 Sep 2017

Publication information
IPC: B01L 3/00 A1
Determination of thermal characteristics of standard and improved hollow concrete blocks using different measurement techniques

The lighter weight, improved thermal properties and better acoustic insulation of hollow-core concrete blocks are few of the characteristics that one encounters when comparing them to traditional Maltese globigerina limestone solid blocks. As a result, hollow concrete blocks have recently been in greater demand. However, their transmittance, or U-value, is still quite high and does not meet the minimum energy requirements for constructing new buildings. This paper is focused on the investigation of the thermal properties of a new building block, developed as part of a nationally-funded research project ThermHCB, with the aim of improving the U-value of such blocks without changing their compressive strength, physical dimensions or manufacturing process. Measurement techniques were applied to obtain comparative values of the thermal transmittance for standard and improved HCBs, using different EN and draft standards. Compressive testing was carried out concurrently in order to ensure that the minimum benchmark compressive strength was reached. The comparison between these results provides information on the reliability of the methodologies used to determine the thermal properties of building elements in-situ, without having to conduct such tests in a laboratory hot box setup.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Dynamical Systems, University of Malta, Galea Curmi Engineering Services Ltd.
Authors: Caruana, C. (Ekstern), Yousif, C. (Ekstern), Bacher, P. (Intern), Buhagiar, S. (Ekstern), Grima, C. (Ekstern)
Pages: 336-346
Publication date: 1 Sep 2017
Main Research Area: Technical/natural sciences

The effect of age on the intestinal mucus thickness, microbiota composition and immunity in relation to sex in mice

A mucus layer covers and protects the intestinal epithelial cells from direct contact with microbes. This mucus layer not only prevents inflammation but also plays an essential role in microbiota colonization, indicating the complex interplay between mucus composition-microbiota and intestinal health. However, it is unknown whether the mucus layer is influenced by age or sex and whether this contributes to reported differences in intestinal diseases in males and females or with ageing. Therefore, in this study we investigated the effect of age on mucus thickness, intestinal microbiota composition and immune composition in relation to sex. The ageing induced shrinkage of the colonic mucus layer was associated with bacterial penetration and direct contact of bacteria with the epithelium in both sexes. Additionally, several genes involved in the biosynthesis of mucus were downregulated in old mice, especially in males, and this was accompanied by a decrease in abundances of various Lactobacillus species and unclassified Clostridiales type IV and XIV and increase in abundance of the potential pathobiont Bacteroides vulgatus. The changes in mucus and microbiota in old mice were associated with enhanced activation of the immune system as illustrated by a higher percentage of effector T cells in old mice. Our data contribute to a better understanding of the interplay between mucus-microbiota-and immune responses and ultimately may lead to more tailored design of strategies to modulate mucus production in targeted groups.

General information
Optimal pseudorandom sequence selection for online c-VEP based BCI control applications

Background: In a c-VEP BCI setting, test subjects can have highly varying performances when different pseudorandom sequences are applied as stimulus, and ideally, multiple codes should be supported. On the other hand, repeating the experiment with many different pseudorandom sequences is a laborious process. Aims: This study aimed to suggest an efficient method for choosing the optimal stimulus sequence based on a fast test and simple measures to increase the performance and minimize the time consumption for research trials. Methods: A total of 21 healthy subjects were included in an online wheelchair control task and completed the same task using stimuli based on the m-code, the gold-code, and the Barker-code. Correct/incorrect identification and time consumption were obtained for each identification. Subject-specific templates were characterized and used in a forward-step first-order model to predict the chance of completion and accuracy score. Results: No specific pseudorandom sequence showed superior accuracy on the group basis. When isolating the individual performances with the highest accuracy, time consumption per identification was not significantly increased. The Accuracy Score aids in predicting what pseudorandom sequence will lead to the best performance using only the templates. The Accuracy Score was higher when the template resembled a delta function the most and when repeated templates were consistent. For completion prediction, only the shape of the template was a significant predictor. Conclusions: The simple and fast method presented in this study as the Accuracy Score, allows c-VEP based BCI systems to support multiple pseudorandom sequences without increase in trial length. This allows for more personalized BCI systems with better performance to be tested without increased costs.
A DEVICE AND METHOD FOR MEASURING TAR IN A TAR-ENVIRONMENT
The present disclosure describes a device and corresponding method for measuring tar in a tar environment, e.g., a tar producing environment such as a stove or a combustion engine, based on UV absorption spectroscopy. A first measurement along an optical path in the tar environment is performed at a wavelength less than 340 nm at which both tar and non-tar elements absorb. This measurement is compensated for non-tar absorption by means of a second measurement at a wavelength equal to or greater than 340 nm at which tar does not absorb. From the non-tar compensated absorbance value a measure of tar in the tar environment is derived and an air intake in the tar environment is regulated based on the measure of tar.

General information
State: Published
Organisations: Department of Chemical and Biochemical Engineering, CHEC Research Centre
Authors: Clausen, S. (Intern), Fateev, A. (Intern)
Publication date: 31 Aug 2017

Publication information
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Date: 31/08/2017
Priority date: 22/02/2016
Priority number: EP20160156675
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Main Research Area: Technical/natural sciences
Source: espacenet
Source-ID: WO2017144507
Publication: Research › Patent – Annual report year: 2017

A set of robotic building elements
A set of building elements (900), comprising one or more building elements (101;701;901..907) with a housing (119) which is selected from a group of straight, bend, L-shaped, and T-shaped bodies with one or more end-portions (121); wherein the building elements are configured with at least one connector (103) configured as a plug integrated with or installed in at least some of the end-portions (121). The connectors (103) comprise: an abutment face (201) with a centre portion (202); a diagonally magnetized magnet arranged behind the abutment face (201); and a pair of a female engagement member (504) extending radially from the centre portion (202) and a male engagement member (503) extending from the centre portion (202); wherein a depth (D) of the female engagement member and a height (H) of the corresponding male engagement member is greater than a width (Wm) of the male engagement member or greater than a width (Wf) of the female engagement member. At least a first building element among the building elements (101;701) comprises at least a first one of the connectors (103); wherein the at least first one of the connectors (103) is rotatable mounted in a bearing (108) fixed to the first building element. A drive unit (114) is coupled to turn the first one of connectors (103) in response to a control signal and an energy storage unit (117) is coupled to supply operating power the drive unit. Preferably, the body members (119) are tubular or tubular with one or more branches.