

3. Иностраный поиск

Аналитический поиск в международных источниках (Google Scholar, ScienceDirect, Wiley, SpringerLink) с использованием ключевых слов: “Buckingham Pi theorem”, “ π -theorem dimensional analysis”, “dimensionless numbers” позволил отобрать 5 ключевых статей ведущих учёных (Van Geem, Astarita и др.), активно применяющих π -теорему для проектирования и масштабирования промышленных процессов.

Дополнительно учтены показатели журналов по SJR и h-index авторов, демонстрирующие научную значимость исследований.

3.1 Статьи

№	Авторы	Название статьи	Г о д	Журнал / Издательство	h-index (основно го автора)
1	Van Geem K.M.	Dimensional analysis for scaling up and down steam cracking reactors.	2 0 0 7	Chemical Engineering Journal	63 (Van Geem K.M.)
2	Iuliana Vintila	Mass and heat transfer coefficients assessment, optimisation and validation for multiphase food systems under transient stages	2 0 1 2	Trends in Food Science & Technology	22 (Iuliana Vintila)
3	Lin J.H.	Dimensional analysis of chevron-type plate heat exchangers.	2 0 0 7	International Communications in Heat and Mass Transfer	65 (Lin J.H.)
4	Sandor Vajda, Herschel Rabitz	Parametric sensitivity and self-similarity in thermal explosion theory	2 0 0 1	Asia-Pacific Journal of Chemical Engineering	60 (Sandor Vajda)
5	Astarita G.	Dimensional analysis, scaling, and orders of magnitude.	1 9 9 7	Chemical Engineering Science	52 (Astarita G.)

3.2 SJR

Chemical Engineering Journal

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	SJR 2024
Netherlands	Chemical Engineering └ Chemical Engineering (miscellaneous)	Elsevier B.V.	2.696 Q1
Universities and research institutions in Netherlands	Chemistry └ Chemistry (miscellaneous)		H-INDEX
Media Ranking in Netherlands	Engineering └ Industrial and Manufacturing Engineering		337
	Environmental Science └ Environmental Chemistry		

Рисунок 3.2.1 – Рейтинг сайта “Chemical Engineering Journal”

Trends in Food Science and Technology

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	SJR 2024
United Kingdom	Agricultural and Biological Sciences └ Food Science	Elsevier Ltd	3.247 Q1
Universities and research institutions in United Kingdom	Biochemistry, Genetics and Molecular Biology └ Biotechnology		H-INDEX
Media Ranking in United Kingdom			271

Рисунок 3.2.2 – Рейтинг сайта “Trends in Food Science & Technology”

International Communications in Heat and Mass Transfer

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	SJR 2024
United Kingdom	Chemical Engineering └ Chemical Engineering (miscellaneous)	Elsevier Ltd	1.063 Q1
Universities and research institutions in United Kingdom	Physics and Astronomy └ Atomic and Molecular Physics, and Optics └ Condensed Matter Physics		H-INDEX
Media Ranking in United Kingdom			153

Рисунок 3.2.3 – Рейтинг сайта “International Communications in Heat and Mass Transfer”

Asia-Pacific Journal of Chemical Engineering

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	SJR 2024
United States  Universities and research institutions in United States  Media Ranking in United States	Chemical Engineering └ Chemical Engineering (miscellaneous) Energy └ Renewable Energy, Sustainability and the Environment Environmental Science └ Waste Management and Disposal	Wiley-Blackwell	0.339 Q3 H-INDEX 47

Рисунок 3.2.4 – Рейтинг сайта “Asia-Pacific Journal of Chemical Engineering”
Chemical Engineering Science

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	SJR 2024
United Kingdom  Universities and research institutions in United Kingdom  Media Ranking in United Kingdom	Chemical Engineering └ Chemical Engineering (miscellaneous) Chemistry └ Chemistry (miscellaneous) Engineering └ Industrial and Manufacturing Engineering Mathematics └ Applied Mathematics	Elsevier B.V.	0.840 Q1 H-INDEX 225

Рисунок 3.2.5 – Рейтинг сайта “Chemical Engineering Science”

3.3 Патенты

Патентный поиск показал наличие зарубежных разработок, связанных с оптимизацией реакторов и оборудования через безразмерные параметры (рис. 3.3.1).

Google Patents Astarita G.    

 (Astarita G.);

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Fusion proteins comprising enzyme replacement therapy enzymes
WO EP US CN JP KR AU BR CA CL CO CR IL MA MX MY PE PH SA SG TW • [US20210198640A1](#) • Giuseppe Astarita • Denali Therapeutics Inc.
Priority 2017-10-02 • Filed 2020-11-23 • Published 2021-07-01
Provided herein are fusion proteins that comprise an enzyme replacement therapy enzyme and an Fc region, as well as methods of using such proteins to treat a lysosomal storage disorder. Methods for transporting agents across the blood-brain barrier are also provided herein.

Systems and methods for extraction of carbon dioxide from air
WO US • [US8702847B2](#) • Klaus S. Lackner • Klaus S. Lackner
Priority 2004-05-04 • Filed 2012-05-03 • Granted 2014-04-22 • Published 2014-04-22
The present invention describes methods and systems for extracting, capturing, reducing, storing, sequestering, or disposing of carbon dioxide (CO₂), particularly from the air. The CO₂ extraction methods and systems involve the use of chemical processes. Methods are also described for extracting ...

Functionalized ionic liquids, and methods of use thereof
WO EP US CN JP KR AU CA ZA • [US7744838B2](#) • James H. Davis, JR. • University Of South Alabama
Priority 2002-04-05 • Filed 2007-04-24 • Granted 2010-06-29 • Published 2010-06-29
Astarita, G.; Savage, D. W.; Bisio, A. Gas Treating with Chemical Solvents; Wiley-Interscience: New York, 1983.
Such interactions between gases and pure liquids or solutions are the bases for numerous gas separation technologies, including commercial systems for the removal of CO₂ from natural gas.

Aerogel sorbents
US • [US9931612B2](#) • Redouane Begag • Aspen Aerogels, Inc.
Priority 2012-04-28 • Filed 2015-11-25 • Granted 2018-04-03 • Published 2018-04-03
Carbon dioxide scrubbing is currently used on a large scale for the purification of industrial gases (natural gas, syngas, etc.). These processes use mainly alkanolamine aqueous solutions (G. Astarita, D. W. Savage and A. Bisio, Gas Treating with Chemical Solvents, John Wiley, N Y, 1983), the most ...

Functionalized adsorbent for removal of acid gases and use thereof
WO US CA • [US7767004B2](#) • Abdelhamid Sayari • University Of Ottawa
Priority 2005-03-11 • Filed 2006-03-13 • Granted 2010-08-03 • Published 2010-08-03
The present invention provides a functionalized adsorbent for removal of acid gases, which comprises a pore-expanded mesoporous support having a pore volume of between 0.7 and 3.6 cc/g, a median pore diameter of between 1 and 25 nm, and a BET surface area of between 500 and 1600 m²/g. The support ...

Multi-fractal heatsink system and method
US EP US CN • [US10270221B2](#) • Alexander Schmitt • Ford Global Technologies LLC

Рисунок 3.3.1 – Патент иностранного автора Astarita G.

Google Patents **Sandor Vajda**    

 Inventor: Sandor Vajda;

About 13 results  Download  Side-by-side

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Streptavidin mutants
 WO EP US AU CA · [US6022951A](#) · Sandor Vajda · Univ Boston
 Priority 1995-04-11 · Filed 1996-04-10 · Granted 2000-02-08 · Published 2000-02-08
 The present invention relates to streptavidin proteins and peptides having a altered physical properties such as an increased stability or increased or decreased affinity for binding biotin. The invention also relates to methods for the detection, identification, separation and isolation of ...

Multiflavor streptavidin
 WO EP US JP AU CA · [US6368813B1](#) · Sandor Vajda · The Trustees Of Boston University
 Priority 1997-03-14 · Filed 1998-03-13 · Granted 2002-04-09 · Published 2002-04-09
 Compounds and methods are described for producing streptavidin mutants with changed affinities. In particular, modifications to the sequence of the natural streptavidin gene is described to create amino acid substitutions resulting in greater affinity for biotin substitutes than for biotin.

Patent HU913636D0
 HU · HU913636D0 · Sandor Vajda · Alkaloida Vegyeszeti Gyar
 Priority 1991-11-21 · Filed 1991-11-21 · Published 1992-02-28

Method for growing acorn of peduncular and sessile oak
 HU · HUT43465A · Sandor Vajda · Erdeszeti Tudomanyos Intezet
 Priority 1986-05-29 · Filed 1986-05-29 · Published 1987-11-30

New poppy variety
 HU · HU913201D0 · Sandor Vajda · Alkaloida Vegyeszeti Gyar
 Priority 1991-10-10 · Filed 1991-10-10 · Published 1992-01-28

General strategy for vaccine and drug design
 US · [US5495423A](#) · Sandor Vajda · Trustees Of Boston University

 Priority 1993-10-25 · Filed 1993-10-25 · Granted 1996-02-27 · Published 1996-02-27
 A method for computing the conformation and location that a protein fragment will obtain in binding to the active site of a receptor is provided. The invention relates to both the computation of conformation and location of natural ligands within an active site and the design of artificial ligands ...

Preatomizing insert of fuel economy
 HU · [HU185812B](#) · Sandor Vajda · Sandor Vajda
 Priority 1983-01-20 · Filed 1983-01-20 · Published 1985-04-28
 FIELD OF THE INVENTION The present invention relates to a fuel-saving pre-sprayer for gasoline atomizers having a main nozzle, a balancing shaft, a venturi and a suction cup. According to a further development of the invention, the insert is provided with a tubular cladding (12) and a partially ...

Рисунок 3.3.2 – Патент иностранного автора Sandor Vajda

Вывод: Интерес к практическому использованию размерностного анализа выше за рубежом, чем в России. Это указывает на возможность расширения патентной активности в отечественной технологической инженерии.