

FCR 16

Office of the President
December 11, 2018

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the period July 1, 2018 to September 30, 2018.

Background: At its March 1997 meeting, the Board of Trustees authorized the University of Kentucky Research Foundation to conduct all future copyright and patent filings and prosecutions. Quarterly reports on patent and copyright applications are to be submitted to the Finance Committee of the Board.

Action taken: Approved Disapproved Other _____

PATENT ASSIGNMENTS
FOR THE PERIOD July 1, 2018 TO September 30, 2018

Patents

The following assignments on behalf of the Board of Trustees of the University of Kentucky Research Foundation have been executed:

1. **U.S. Patent Application Serial Number:** PCT/US18/41418
Filed: July 10, 2018
Title: LOUPE-BASED INTRAOPERATIVE FLUORESCENCE IMAGING DEVICE FOR THE GUIDANCE OF TUMOR RESECTION
Inventors: Guoqiang Yu, Thomas Pittman and Chong Huang (College of Medicine)
Technical Description: This device is a hands-free, wearable, magnifying eye loupe-based imaging device that uses fluorescence imaging to identify tumor margins.
Summary: This new loupe-based wearable fluorescence imaging device assists in visualizing target tissue in surgical procedures, such as cancer resection.
Application: Surgical device

2. **U.S. Patent Application Serial Number:** 16/032,648
Filed: July 11, 2018
Title: PACKING MATERIAL SONICATION
Inventors: Kunlei Liu, Roger S. Perrone and Bradley D. Irvin (Center for Applied Energy Research)
Technical Description: This carbon capture system provides acoustic energy in packed columns and beds in carbon capture systems to increase mass-transfer, absorption and/or reaction rate of liquid solvents used for absorption processes.
Summary: This invention provides a carbon capture system and methods for improving carbon capture through the introduction of sonic transducers within packed beds in the absorber. The system of sonic energy applied to a packed bed can improve yield or transfer rate in systems using a two-phase reaction, such as in general absorption systems, distillation systems or stripping systems.
Application: Carbon capture systems

3. **U.S. Patent Application Serial Number:** 16/034,255
Filed: July 12, 2018
Title: SYSTEM AND METHOD FOR DYNAMIC OBJECT ROUTING
Inventors: Himanshu Thapliyal and S. Dinesh Kumar (College of Engineering)
Technical Description: This adiabatic logic-in-memory-based complementary metal-oxide-semiconductor/magnetic-tunnel-junction circuit utilizes an adiabatic logic-based pre-charged sense amplifier to recover energy from its output load capacitors.
Summary: These adiabatic logic-in-memory-based complementary metal-oxide-semiconductor/magnetic tunnel junction circuits provide energy savings for electronic devices.
Application: Energy savings

- 4. U.S. Patent Application Serial Number: 16/037,516**
Filed: July 17, 2018
Title: LIGNIN VALORIZATION IN IONIC LIQUIDS AND DEEP EUTECTIC SOLVENT VIA CATALYSIS AND BIOCATALYSIS
Inventors: Jian Shi, Lalitendu Das, Enshi Liu and Joseph C. Stevens (College of Agriculture, Food and Environment)
Technical Description: This invention provides a method for extracting valorized compounds from lignin by contacting lignins with an ionic liquid and/or a deep eutectic solvent and add a catalyst and/or a biocatalyst to assist in breaking down the source material.
Summary: This is a method for valorization of lignins by utilizing ionic liquids and deep eutectic solvent with catalysts and/or biocatalysts.
Application: Biofuel production
- 5. U.S. Patent Application Serial Number: 16/038,171**
Filed: July 17, 2018
Title: ANTIFUNGAL COMPOSITIONS
Inventors: Sylvie Garneau-Tsodikova, Selina Yijia Li Holbrook and Emily K. Dennis (College of Pharmacy)
Technical Description: This invention provides antifungal compositions and methods of use thereof. The antifungal compositions include an antifungal agent and an antipsychotic agent or an antihistamine.
Summary: These antifungal compounds have improved antifungal activity and reduced adverse side effects.
Application: Antifungals
- 6. U.S. Patent Application Serial Number: 16/045,606**
Filed: July 25, 2018
Title: NETWORK ARCHITECTURE FOR GENERATING A LABELED OVERHEAD IMAGE
Inventors: Nathan Jacobs and Scott Workman (College of Engineering)
Technical Description: This invention provides a computer-implemented process for generating a labeled overhead image of a geographic area.
Summary: From predicting the weather to planning the future of cities, accurately monitoring widespread areas of the Earth's surface is essential to many scientific fields and society in general. This invention utilizes deep convolutional neural networks to extract features from both overhead and ground-level imagery so as to estimate geospatial functions.
Application: City planning
- 7. U.S. Patent Application Serial Number: 16/122,655**
Filed: September 5, 2018
Title: MITHRAMYCIN DERIVATIVES HAVING INCREASED SELECTIVITY AND ANTI-CANCER ACTIVITY

Inventors: Jurgen Rohr, Oleg Tsodikov, Markos Leggas, Caixia Hou, Joseph Eckenrode, Prithiba Mitra and Abhisek Mandal (College of Pharmacy)

Technical Description: This invention provides mithramycin side chain carboxylic acid derivatives.

Summary: Erythroblast transformation-specific (ETS) transcription factors have been implicated in several cancers. These mithramycin side chain carboxylic acid derivatives provide treatment for cancers expressing aberrant ETS factors.

Application: Cancer therapeutics

Patent Activities
Fiscal year to date as of September 30, 2019

	Q1	Q2	Q3	Q4	Total
Full Patent Applications	7				7
Provisional Patent Applications	10				10
Patents Issued	2				2
License Income	\$1,176,827.69				\$1,176,827.69

Patent Application Summary Table

Inventors	College(s)	Title	Brief description
Biomedical			
Guoqiang Yu, Thomas Pittman and Chong Huang	Medicine	Loupe-Based Intraoperative Fluorescence Imaging Device for the Guidance of Tumor Resection	A loupe-based wearable device to enhance real-time visualization of tissue resection
Sylvie Garneau-Tsodikova, Selina Yijia Li Holbrook and Emily K. Dennis	Pharmacy	Antifungal Compositions	Antifungal compounds and methods of use
Jurgen Rohr, Oleg Tsodikov, Markos Leggas, Caixia Hou, Joseph Eckenrode, Prithiba Mitra and Abhisek Mandal	Pharmacy	Mithramycin Derivatives Having Increased Selectivity and Anti-Cancer Activity	Mithramycin side chain carboxylic acid derivatives and their use in the treatment of cancers

Engineering			
Kunlei Liu, Roger S. Perrone and Bradley D. Irvin	Center for Applied Energy Research	Packing Material Sonication	A carbon capture system utilizing sonic transducers within packed beds in the absorber to improve carbon capture efficiency
Jian Shi, Lalitendu Das, Enshi Liu and Joseph C. Stevens	Agriculture, Food and Environment	Lignin Valorization in Ionic Liquids and Deep Eutectic Solvent Via Catalysis and Biocatalysis	A method for extracting valorized compounds from lignin to improve the economic viability of biofuel production
Himanshu Thapliyal and S. Dinesh Kumar	Engineering	System and Method for Dynamic Object Routing	Adiabatic logic-in-memory circuits
Nathan Jacobs and Scott Workman	Engineering	Network Architecture for Generating a Labeled Overhead Image	Computer-implemented process for generating a labeled overhead image of geographic area