

Conn Center for Renewable Energy Research
 Impact Report 2010 - 2020
 INVENTION DISCLOSURES
 CONN CENTER ASSOCIATED FACULTY

AM Rev. 6/2022

			Total Disclosures	107	
#	Track Code	Invention Title	Full Name	Disclosure Date	Affiliation
1	11012	ULTRA-LOW POWER SWITCH AND LATCHING CIRCUIT	Kevin Walsh	08/16/10	Electrical & Computer Engineering
2	11030	MAKING 3-D HETEROGENOUS ARRAYS OF FREESTANDING METAL, POLYMER AND POLYMER-METAL COMPOSITE NANOMATERIALS	Robert Cohn	10/18/10	Electrical & Computer Engineering
3	11031	ULTRAFLEXIBLE BEAD-ON-A-STRING (BOS) DEVICES FOR NANONEWTON FORCE DETECTION	Robert Cohn	10/18/10	Electrical & Computer Engineering
4	11032	MAKING FLAT LAYERS OF GALLIUM FOR PARALLEL FABRICATION OF NANONEEDLES	Robert Cohn	10/18/10	Electrical & Computer Engineering
5	11033	SEMI-HOLLOW NANONEEDLE FOR MICROMANIPULATION BELOW THE LIMIT OF OPTICAL RESOLUTION	Robert Cohn	10/18/10	Electrical & Computer Engineering
6	11090	MICRO-SCALE PHASE-SYNCHED CANTILEVER ASSEMBLIES FOR ENERGY SCAVENGING APPLICATIONS	Bruce Alphenaar	05/03/11	Electrical & Computer Engineering
7	11101	MULTI-MATERIAL LASER SINTERING	Thomas Starr	06/09/11	Chemical Engineering
8	11102	GRAYSCALE LITHOGRAPHY MASK GENERATION SOFTWARE	Kevin Walsh	06/14/11	Electrical & Computer Engineering

9	11104	OIL-BASED NANOFLUIDS FOR HEAT TRANSFER APPLICATIONS	Gerold Willing	06/16/11	Chemical Engineering
10	11107	SYNTHESIS OF 1-METHYL-4-PIVALOYLAMIDO-IMIDAZOLE-2-CARBOXALDEHYDE: A REAGENT FOR IMIDAZOLE-AMINE LIGANDS WITH A SECOND-COORDINATION SPHERE	Robert Buchanan	06/21/11	Chemistry
11	12002	MICROFLUIDIC PARTICLE COUNTER WITH METAL TUBING ELECTRICAL CONTACTS	Cindy Harnett	07/06/11	Electrical & Computer Engineering
12	12075	Recycling of expanded polystyrene (EPS) for long term recovery	Gerold Willing	04/17/12	Chemical Engineering
13	12087	HEAT RESPONSIVE MECHANISM FOR RELEASE OF COVALENTLY BOUND SMALL MOLECULES	Michael Nantz	05/29/12	Chemistry
14	13009	CAPACITANCE-LESS PHOTOVOLTAIC POWER CONVERTER	Michael McIntyre	08/09/12	Electrical & Computer Engineering
15	13042	ELECTROOSMOTIC MICROPUMPS MADE WITH OUT-OF-PLANE ELECTRODES	Cindy Harnett	11/19/12	Electrical & Computer Engineering
16	13057	CONVERSION OF C5 FROM BIOMASS INTO CYCLIC MOLECULES	Christopher Burns	01/18/13	Chemistry
17	13062	BUCKLED MEMS ENERGY HARVESTER	Thomas Berfield	02/07/13	Mechanical Engineering
18	13078	AN INTEGRATED PROCESS TO ECONOMICALLY PRODUCE C-5 SUGARS USING DRIED DISTILLER GRAINS (DDG) FROM GRAIN PROCESSING INDUSTRIES AND INCREASING VALUE	Robert Berson	03/25/13	Chemical Engineering
19	13081	GRAPHENE/ELASTOMER COMPOSITE-BASED TWO-AXIS PHOTO-THERMAL NANOPositionING SYSTEM	Robert Cohn	04/10/13	Electrical & Computer Engineering
20	13090	METHODS FOR RECYCLING STYRENE BUTADIENE RUBBER	Gerold Willing	05/08/13	Chemical Engineering
21	13097	LAYERWISE QUALITY CERTIFICATION AND 3D QUALITY CERTIFICATE FOR ADDITIVE MANUFACTURING AND 3D PRINTING	Thomas Starr	05/30/13	Chemical Engineering

22	14009	ECONOMICAL AND FACILE PROCESS FOR MAKING WATER SOLUABLE CADMIUM SELENIDE QUANTUM DOTS AND THEIR APPLICATION IN LED AND SOLAR CELL DEVICE VIA A	Delania Amos	08/14/13	Chemical Engineering
23	14015	LOW TEMPERATURE COPPER DEPOSITION	Delania Amos	09/10/13	Chemical Engineering
24	14047	CORE-SHELL (CU-NI) NANOPARTICLES FOR PHOTOVOLTAICS	Delania Amos	01/24/14	Chemical Engineering
25	14065	METALLIC NANOPARTICLES FOR INEXPENSIVE PLASMONIC SOLAR CELLS	Delania Amos	05/09/14	Chemical Engineering
26	14066	ELECTROCHEMICAL DISSOLVED OXYGEN REMOVAL FROM MICRO FLUIDIC STREAMS FOR LOC SAMPLE TREATMENT	Richard Baldwin	05/09/14	Chemistry
27	14071	ELECTROPOLISHING OF METAL STRUCTURES WITH INTERIOR SURFACES AND FEATURES MADE BY POWDER BED FUSION ADDITIVE MANUFACTURING PROCESSES	Li Yang	06/05/14	Industrial Engineering
28	15006	MAGNETIC-FIELD INDUCED HYDROLYSIS AS A MECHANISM FOR RAPID RELEASE OF NANOPARTICLE-BOUND SUBSTRATES	Michael Nantz	07/28/14	Chemistry
29	15015	ISOLATION OF XYLOSE FROM BIOMASS HYDROLYZATE STREAM	Michael Nantz, Christopher Burns	09/15/14	Chemistry
30	15029	TRANSITION METAL COMPLEX LABELS FOR IMUUNOSENSORS USING POTENTIAL-MODULATED OPTICAL DETECTION SCHEMES	Sergio Mendes	11/19/14	Physics
31	15030	ELECTRICALLY-MODULATED PHOTONIC BIOSENSORS USING ELECTRO-ACTIVE WAVEGUIDES	Sergio Mendes	11/19/14	Physics
32	15053	METHODS FOR MAKING THIN FILMS OF SELF-ALIGNED CARBON NANOTUBES	Robert Cohn	02/09/15	Electrical & Computer Engineering
33	15058	CALIBRATION-LESS DETECTION OF INDIVIDUAL HEAVY METALS IN MIXTURES	Richard Baldwin	02/18/15	Chemistry
34	15093	MASS PRODUCTION METHOD FOR METAL ORGANIC FRAMEWORKS	Gerold Willing	06/24/15	Chemical Engineering

35	16018	HEAT PIPE-AUGMENTED PASSIVE SOLAR HEATING SYSTEM	Michael Sharp	08/28/15	Mechanical Engineering
36	16021	Three-Dimensional Printing of Polyvinylidene Fluoride (PVDF) Polymers With Piezoelectric Properties	Thomas Berfield	09/28/15	Mechanical Engineering
37	16033	NON-INVASIVE DETECTION OF CORONARY STENOSIS BY CFD & MULTIPHASE MEAN AGE	Robert Berson	11/06/15	Chemical Engineering
38	16040	ADDING THE PRODUCED HYDROGEN FROM PRE-ACIDIFICATION TANK (FIRST STAGE) TO THE SECOND STAGE TO ENHANCE BIOGAS QUALITY (METHANE	Robert Berson	11/24/15	Chemical Engineering
39	16054	AN APPROACH FOR COUPLING A PROJECTOR IMAGE INTO AN IMAGING FIBER BUNDLE	Sergio Mendes	01/14/16	Physics
40	16070	SURFACE MODIFICATION OF OPTICAL MATERIALS WITH HYDROGEN PLASMA FOR FABRICATION OF BRAGG GRATINGS	Sergio Mendes	03/16/16	Physics
41	16082	THIOSEMICARBAZONE AND TRANSITION METAL/NON-TRANSITION METAL THIOSEMICARBAZIDE CATALYSTS FOR HYDROGEN EVOLVING REACTIONS, HYDROGEN	Robert Buchanan, Craig Grapperhaus	04/14/16	Chemistry
42	16095	ANISOTROPIC CONDUCTIVE THREAD FOR LOW-COST CONNECTIONS IN SOFT ELECTRONICS	Cindy Harnett	06/07/16	Electrical & Computer Engineering
43	17022	SELF-CONFIGURING CONTACT ARRAYS FOR INTERFACING WITH ELECTRIC CIRCUITS	Cindy Harnett	10/06/16	Electrical & Computer Engineering
44	17027	ELECTRONIC NOSE FOR DETECTION OF VOLATILE ORGANIC COMPOUNDS	Michael Nantz	11/28/16	Chemistry
45	17032	AUTOMATED SEGMENTATION OF ANATOMICAL OBJECTS THROUGH LEARNED EXAMPLES	Hichem Frigui	02/06/17	Computer Science & Computer Engineering
46	17048	STRETCHABLE OPTICAL FIBERS: THREADS FOR STRAIN-SENSITIVE TEXTILES	Cindy Harnett	04/13/17	Electrical & Computer Engineering
47	17049	A COST-EFFECTIVE EXFOLIATED MOLYBDENUM DISULFIDE AND CONDUCTIVE GRAPHITE COMPOSITE CATHODE FOR AN AQUEOUS RECHARGEABLE LITHIUM ION BATTERY	Sam Park	04/17/17	Mechanical Engineering

48	18006	Multi-sensor Handheld Diagnostic Device	Adel Elmaghraby	07/26/17	Computer Science & Computer Engineering
49	18011	A novel and cost-effective process to produce xylitol from lignocellulosic biomass	Michael Nantz, Christopher Burns	07/27/17	Chemistry
50	18012	Isolation and recovery of xylose from hydrolyzate streams from lignocellulosic biomass	Michael Nantz, Christopher Burns	07/27/17	Chemistry
51	18011	A novel and cost-effective process to produce xylitol from lignocellulosic biomass	Michael Nantz, Christopher Burns	7/27/17	Chemistry
52	18012	Isolation and recovery of xylose from hydrolyzate streams from lignocellulosic biomass	Michael Nantz, Christopher Burns	7/27/17	Chemistry
53	18013	Si-Ge-Si Phototransistor Sensitive to 1.55Åµm Light with a Simple Geometry	Shamus McNamara	08/01/17	Electrical & Computer Engineering
54	18016	Acoustic Energy enabled property isotropy in extrusion-based 3D printed materials	Keng Hsu	8/31/17	Mechanical Engineering
55	18020	Development of a Widely Applicable Method of Hydrofluorination of Alkenes via Bifunctional Activation of Hydrogen Fluoride	Gerald Hammond	09/19/17	Chemistry
56	18021	Semiconductor devices built on yarns	Cindy Harnett	09/27/17	Electrical & Computer Engineering
57	18036	High-Frequency Oscillatory Plastic Deformation Based Solid-State Material Deposition for Metal Surface Repair	Keng Hsu	11/13/17	Mechanical Engineering
58	18043	Soft Optics with Mechanically Tunable Refractive Index	Cindy Harnett	01/04/18	Electrical & Computer Engineering
59	18066	Portable Glovebox for Small Scale Research in Normal and Extreme Environments	Michael Sharp	5/7/18	Mechanical Engineering
60	18067	In-Process Ultrasonic Polling of 3D printed Crystalline/Semi-Crystalline Electroactive Polymers	Thomas Berfield, Keng Hsu	5/8/18	Mechanical Engineering

61	18068	Automatic Structural, Functional Based Personalized Diagnosis of Mild Cognitive Impairment General Descriptive Name: Internal Codename:	Ayman El-Baz	5/15/18	Bioengineering
62	18072	In situ of unique identifiers in additive metal manufactured parts	Thomas Starr	5/21/18	Chemical Engineering
63	18073	Semi Solid supports additive metal manufactured components	Thomas Starr	6/4/18	Chemical Engineering
64	18074	Methods for Detecting Moisture in Briefs that are Compatible with High Volume Brief Manufacturing	John Naber	6/5/18	Electrical & Computer Engineering
65	18075	Double-strand organic polymer photoredox catalysts and their applications	Sachin Handa	6/15/18	Chemistry
66	18077	Use electropolishing for uniform surface treatment of metal components with complex external geometries	Li Yang	6/18/18	Industrial Engineering
67	18080	Modeling and validation of control parameters for material extrusion-based additive manufacturing of thixotropic aluminum alloys	Brent Stucker	6/25/18	Industrial Engineering
68	18081	Photoredox catalysis through irradiation of a catalyst face not in contact with the reaction mixture	Sachin Handa	6/29/18	Chemistry
69	18082	Explainable active learning framework for matrix factorization (ExAL)	Olfa Nasraoui	6/29/18	Computer Science & Computer Engineering
70	18083	Explaining Matrix Factorization Recommendations using Rating or Review Sentiments	Olfa Nasraoui	6/29/18	Computer Science & Computer Engineering
71	19002	Diamond-Based Heterojunction Transistors	Shamus McNamara	7/12/18	Electrical & Computer Engineering
72	19010	Rapid thermal annealing of CH ₃ NH ₃ PbI ₃ perovskite thin films by intense pulsed light with aid of diiodomethane additive	Gautam Gupta	8/29/18	Chemical Engineering
73	19013	Real-Time Non-Invasive Detection and Assessment of Coronary Stenosis by Statistical Correlation	Robert Berson	9/6/18	Chemical Engineering

74	19031	One-pot acid-catalyzed levulinic acid production from lignocellulosic biomass	Noppadon (Tik) Sathitsuksanoh	11/20/18	Chemical Engineering
75	19035	Rapid and Economic Synthesis of Lithium Argyrodites Solid Electrolyte from Liquid-based Synthesis	Hui Wang	12/3/18	Mechanical Engineering
76	19037	Method for Flow Hydrofluorination using Resin-Supported Hydrogen Fluoride	Gerald Hammond	12/6/18	Chemistry
77	19038	Solvent and Metal- Free Regioselective Hydrofluorination of Functionalized Alkynes and Allenes: An Efficient Protocol for Gem-difluorides	Gerald Hammond	12/6/18	Chemistry
78	19039	Flow Battery Chemistries and Technologies	Alex Bates	12/11/18	Mechanical Engineering
79	19040	A Microfabricated nanowire array for detection of using Marijuana by Surface Enhanced Raman Spectroscopy (SERS)	Xiao-An Fu	12/12/18	Chemical Engineering
80	19068	Synthesis and Electrochemical Characterization of Copper (II)Bis (thiosemicarbazone)Catalysts for HydrogenEvolution Reactions	Robert Buchanan, Craig Grapperhaus	2/27/19	Chemistry
81	19069	Homogenous Reduction of Atmospheric Carbon Dioxide by a Neutral Zinc Complex	Robert Buchanan, Craig Grapperhaus	2/28/19	Chemistry
82	19075	Optical strain sensing with ambient light	Cindy Harnett	3/14/19	Electrical & Computer Engineering
83	19077	New catalyst for oxygen evolution reaction	Farshid Ramezanipour	3/18/19	Chemistry
84	19082	Sports helmet designs with hybrid cellular structures	Li Yang	4/19/19	Industrial Engineering
85	19083	Shape Transformation Photolithography: Mass production rate processes for manufacturing ultraflexible 3D MEMS	Robert Cohn	4/24/19	Electrical & Computer Engineering
86	19087	Torsional Shear Induced Microstructure & Property Tuning in Extrusion-Based 3D Printed Homogeneous and Composite Materials	Keng Hsu	5/16/19	Mechanical Engineering

87	19096	Biomass-based solid composite electrolytes for batteries	Noppadon (Tik) Sathitsuksanoh	6/24/19	Chemical Engineering
88	19097	Selective glucose dehydration to 5-hydroxymethyl furfural by phosphotungstic acid encapsulated in metal-organic frameworks	Noppadon (Tik) Sathitsuksanoh	6/24/19	Chemical Engineering
89	20003	Microgrippers for Transferring Devices to Fibrous Surfaces	Cindy Harnett	7/23/19	Electrical & Computer Engineering
90	20007	Surface-propagated atom transfer radical polymerization (SP-ATRP) and related extrusion processes	Sachin Handa	8/26/19	Chemistry
91	20011	Method for operating a linear compressor	Michael McIntyre	9/13/19	Electrical & Computer Engineering
92	20012	METHOD FOR OPERATING A SYNCHRONOUS MOTOR	Michael McIntyre	9/17/19	Electrical & Computer Engineering
93	20013	Large Scale Synthesis of Surfactant PS-750-M	Sachin Handa	9/17/19	Chemistry
94	20014	METHOD FOR OPERATING A COMPRESSOR	Michael McIntyre	9/18/19	Electrical & Computer Engineering
95	20038	Fiber pretreatment to reduce interfacial resistance, enhance fiber dispersion, lower composite viscosity, and reduce interfacial voids during natural fiber-polymer composite filament production for 3D	Kunal Kate	2/14/20	Mechanical Engineering
96	20042	Sustainable halosequestration methodology	Sachin Handa	2/20/20	Chemistry
97	20044	Mapping Laser Crack Measurement System to Visual Evaluation System	Lihui Bai, Zhihui Sun	2/27/20	Industrial, Civil & Environmental Engineering
98	20067	Using biomass waste powders as a set-retardation agent in cement or concrete	Noppadon (Tik) Sathitsuksanoh, Zhihui Sun	5/8/20	Chemical, Civil & Environmental Engineering
99	20073	Metal fused filament fabrication of Ti-6Al-4V	Sundar Atre, Kunal Kate	5/14/20	Mechanical Engineering

100	20074	Absolute Length Sensor Based on Time-of-Flight in Stretchable Optical Materials	Cindy Harnett	5/19/20	Electrical & Computer Engineering
101	20077	Subcutaneous multi-electrode neurostimulator	John Naber	6/4/20	Electrical & Computer Engineering
102	21004	Optical Fiber Beam Characterization using Mie Scattering	Shamus McNamara	7/13/20	Electrical & Computer Engineering
103	21008	CH ₄ -Assisted Catalytic Hydrodeoxygenation of Oxygenates over ZnO-MoO ₃ /TiO ₂	Noppadon (Tik) Sathitsuksanoh	7/28/20	Chemical Engineering
104	21009	CO ₂ -Promoted Catalyst-Free Dehydration of Sorbitol Leading to High 1,4-Sorbitan Selectivity	Noppadon (Tik) Sathitsuksanoh	7/28/20	Chemical Engineering
105	21037	SnO ₂ top contact for perovskite solar cells	Craig Grapperhaus	11/2/20	Chemistry
106	21026	Electrochemical Reduction of Flue Gas CO ₂ to Commercially Viable C ₂ - C ₄ Products	Craig Grapperhaus	11/4/20	Chemistry
107	21031	Surface treatment of aggregates for concrete deterioration mitigation	Noppadon (Tik) Sathitsuksanoh, Zhihui Sun	12/18/20	Chemical, Civil & Environmental Engineering