

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

AM Rev. 6/2022

			Total Disclosures	60	
#	Track Code	Invention Title	Full Name	Disclosure Date	Affiliation
1	09055	Novel technique for fabrication of graphene nano-ribbons	Gamini Sumanasekera	02/24/09	Conn Center
2	10054	THIN WALLED CARBON MIRCOTUBES: HIGH RATE PERFORMANCE AS ANODES IN LITHIUM ION BATTERIES	Gamini Sumanasekera, Mahendra Sunkara, Jacek Jasinski	01/13/10	Conn Center
3	11068	SOLVO-PLASMA OXIDATION: A NEW METHOD FOR SCALABLE MANUFACTURING OF METAL COMPOUND NANOWIRES	Mahendra Sunkara	02/09/11	Conn Center
4	12014	VISIBLE-LIGHT ABSORPTION AND LARGE BAND-GAP BOWING OF GAN <sub>1-x</sub> SB <sub>x</sub> FROM FIRST PRINCIPLES	Mahendra Sunkara, Jacek Jasinski	09/27/11	Conn Center
5	12065	Low temperature sintering of nanocomposites using light	Mahendra Sunkara, Thad Druffel	03/20/12	Conn Center
6	12088	NICKEL-DECORATED ZINC OXIDE NANOWIRES AS REACTIVE ADSORBENT FOR HYDRODESULFURIZATION PROCESSES	Mahendra Sunkara	05/30/12	Conn Center
7	13009	CAPACITANCE-LESS PHOTOVOLTAIC POWER CONVERTER	Thad Druffel	08/09/12	Conn Center

8	13064	METHOD OF FABRICATING HOLLOW SPHERES NANOCOMPOSITES OF INORGANIC NANOPARTICLES AND GRAPHENE OXIDE-BASED NANOSTRUCTURES	Jacek Jasinski	02/08/13	Conn Center
9	13076	RAPID SCALABLE TRANSFER OF GRAPHENE THIN CONDUCTING FILMS TO TRANSPARENT SUBSTRATES	Gamini Sumanasekera, Thad Druffel	03/11/13	Conn Center
10	13078	AN INTEGRATED PROCESS TO ECONOMICALLY PRODUCE C-5 SUGARS USING DRIED DISTILLER GRAINS (DDG) FROM GRAIN PROCESSING INDUSTRIES AND INCREASING VALUE	Mahendra Sunkara, Jagannadh Satyavolu	03/25/13	Conn Center
11	13096	A ROBUST ANAEROBIC DIGESTION PROCESS FOR BIOGAS BASED POWER GENERATION	Mahendra Sunkara, Jagannadh Satyavolu	05/24/13	Conn Center
12	14015	LOW TEMPERATURE COPPER DEPOSITION	Thad Druffel	09/10/13	Conn Center
13	14043	POLYMERIC MEMBRANE MODULES FOR PORTABLE HYDROGEN STORAGE	Gamini Sumanasekera, Jagannadh Satyavolu	12/16/13	Conn Center
14	14047	CORE-SHELL (CU-NI) NANOPARTICLES FOR PHOTOVOLTAICS	Thad Druffel	01/24/14	Conn Center
15	14065	METALLIC NANOPARTICLES FOR INEXPENSIVE PLASMONIC SOLAR CELLS	Thad Druffel	05/09/14	Conn Center
16	15013	NEW ZERO-STRAIN ANODE MATERIAL FOR LITHIUM-ION BATTERY	Mahendra Sunkara	09/11/14	Conn Center
17	15015	ISOLATION OF XYLOSE FROM BIOMASS HYDROLYZATE STREAM	Jagannadh Satyavolu	09/15/14	Conn Center
18	15018	NEW CARBON DIOXIDE ADSORBENTS: SYNTHESIS, HIGH TEMPERATURE CO2 CAPTURE, AND MANUFACTURING	Mahendra Sunkara	09/26/14	Conn Center
19	15047	MOISTURE AND OXYGEN RESISTANT PEROVSKITE SOLAR CELLS	Mahendra Sunkara	12/09/14	Conn Center

20	15060	SOLUTION BASED RAPID SYNTHESIS OF MULTICOMPONENT METAL OXIDE ALLOYS WITH EXCEPTIONAL COMPOSITION CONTROL BY THE SOLVOPLASMA TM TECHNIQUE	Mahendra Sunkara	02/24/15	Conn Center
21	15072	FABRICATION OF ELEMENTAL COPPER FOR PRINTED ELECTRONICS BY INTENSE PULSED LIGHT PROCESS OF COPPER NITRATE HYDROXIDE	Thad Druffel	04/23/15	Conn Center
22	15074	MAGNETOTRIBOLOGY	Gamini Sumanasekera	04/24/15	Conn Center
23	15082	FACILE, SCALABLE, AND LOW-COST METHOD OF PRODUCING CARBON NANOCAGES	Gamini Sumanasekera, Jacek Jasinski	05/21/15	Conn Center
24	16009	PRODUCTION OF PYROCHLORES FROM DROPLET-TO-PARTICLE OXIDATION BY PLASMA	Mahendra Sunkara, Jacek Jasinski	08/11/15	Conn Center
25	16036	ELECTRON MICROSCOPY MOUNTING APPARATUS	Mahendra Sunkara, William Paxton	11/12/15	Conn Center
26	16038	SOLAR HYDROGEN PRODUCTION FROM SEAWATER VAPOR ELECTROLYSIS	Joshua Spurgeon	11/18/15	Conn Center
27	16053	INTENSE PULSED LIGHT PROCESSING OF CH <sub>3</sub> NH <sub>3</sub> PbI <sub>3</sub> THIN FILMS	Thad Druffel	01/13/16	Conn Center
28	17007	METHOD OF PRODUCTION OF GaSbP EPITAXIAL LAYERS AND ELECTRODES THEREOF	Mahendra Sunkara, William Paxton	08/18/16	Conn Center
29	17014	INCORPORATION OF FLASH HEATING FOR IN-LINE PREHEATING OF BIOMASS FOR DENSIFICATION OF TORREFIED BIOMASS	Mahendra Sunkara, Thad Druffel, Jagannadh Satyavolu, William Paxton	09/06/16	Conn Center
30	17015	RAPID HEAT TREATMENT TO IMPROVE THE HYDROPHOBICITY OF DENSIFIED BIOMASS FOR TRANSPORTATION	Mahendra Sunkara, Thad Druffel, Jagannadh Satyavolu, William Paxton	09/06/16	Conn Center
31	17040	ELECTROCHEMICAL STUDY OF PRE LITHIATED MOLYBDENUM OXIDE (Li (1.33) Mo (0.66) O <sub>2</sub> ANODE AND SULFUR CATHODE AS A Li-S FULL CELL	Gamini Sumanasekera, Mahendra Sunkara	03/16/17	Conn Center

32	17049	A COST-EFFECTIVE EXFOLIATED MOLYBDENUM DISULFIDE AND CONDUCTIVE GRAPHITE COMPOSITE CATHODE FOR AN AQUEOUS RECHARGEABLE LITHIUM ION BATTERY	Bijandra Kumar	04/17/17	Conn Center
33	17050	Lithium Silicate nano material based atomospheric water extraction	Mahendra Sunkara, Thad Druffel	04/27/17	Conn Center
34	17058	A NOVEL CARBONIZATION PROCESS TO PRODUCE FUNCTIONALIZED CARBON FROM BIOMASS	Mahendra Sunkara, Jagannadh Satyavolu	05/16/17	Conn Center
35	18002	Method to simultaneously promote hydrophobicity and binding ability to torrefied biomass without the addition of an external binder	Jagannadh Satyavolu, Osama Bu-Aamiri, Chamila Thilakaratne	07/17/17	Conn Center
36	18003	Improving product attributes and economic viability of a biomass torrefaction plant	Jagannadh Satyavolu, Osama Bu-Aamiri, Chamila Thilakaratne	07/17/17	Conn Center
37	18002	Method to simultaneously promote hydrophobicity and binding ability to torrefied biomass without the addition of an external binder	Jagannadh Satyavolu, Osama Bu-Aamiri, Chamila Thilakaratne	07/17/17	Conn Center
38	18003	Improving product attributes and economic viability of a biomass torrefaction plant	Jagannadh Satyavolu, Osama Bu-Aamiri, Chamila Thilakaratne	07/17/17	Conn Center
39	18011	A novel and cost-effective process to produce xylitol from lignocellulosic biomass	Jagannadh Satyavolu	07/27/17	Conn Center
40	18012	Isolation and recovery of xylose from hydrolyzate streams from lignocellulosic biomass	Jagannadh Satyavolu	07/27/17	Conn Center
41	18014	Electrode design and configuration for microbial electrolysis cell (MEC) to improve hydrogen production	Jagannadh Satyavolu, Joshua Spurgeon	08/01/17	Conn Center
42	18030	Heterogeneously Catalyzed Two-step Cascade Electrochemical Reduction of CO2 to Ethanol	Joshua Spurgeon	10/18/17	Conn Center
43	18046	Frequency Selective Surface for Inventory Mapped using WiFi Frequencies	Thad Druffel	01/19/18	Conn Center

44	19002	Diamond-Based Heterojunction Transistors	Mahendra Sunkara, William Paxton	07/12/18	Conn Center
45	19007	A low-noble-metal WIrOx water oxidation electrocatalyst for acidic media via rapid plasma synthesis	Mahendra Sunkara, Joshua Spurgeon	08/28/18	Conn Center
46	19010	Rapid thermal annealing of CH3NH3PbI3 perovskite thin films by intense pulsed light with aid of diiodomethane additive	Thad Druffel, Krishnamraju Ankireddy	08/29/18	Conn Center
47	19039	Flow Battery Chemistries and Technologies	Mahendra Sunkara, William Paxton	12/11/18	Conn Center
48	19085	Lithium Molybdate-Sulfur Battery	Gamini Sumanasekera, Mahendra Sunkara	05/08/19	Conn Center
49	19095	Liquid Phase Epitaxy of III-V Materials and Alloys	Mahendra Sunkara	06/18/19	Conn Center
50	20005	Copper paste for solar cells	Thad Druffel	08/12/19	Conn Center
51	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	Jagannadh Satyavolu	02/14/20	Conn Center
52	20054	Disinfectant and Nanofilter based Respirators	Mahendra Sunkara, Thad Druffel	04/13/20	Conn Center
53	20059	Diamond-based antimicrobial surface	William Paxton	04/28/20	Conn Center
54	20078	Air-Stable and Flexible Sulfide-based Solid Composite Electrolytes for High-Performance Solid-State Lithium Batteries	Thad Druffel	06/09/20	Conn Center
55	21001	Arsenic-phosphorus alloys as potential thermoelectric materials	Gamini Sumanasekera, Jacek Jasinski	07/02/20	Conn Center

56	21007	Nano amended filter medium for utilization in HVAC systems	Mahendra Sunkara	07/21/20	Conn Center
57	21022	Novel Na superionic conductors (Na <sub>3</sub> Sb <sub>1-x</sub> M <sub>x</sub> S <sub>4-y</sub> X <sub>y</sub> ) for solid-state Na batteries	Thad Druffel	10/28/20	Conn Center
58	21023	Flexible and Stable Sulfide-Based Composite Electrolytes for High-Performance Solid-State Sodium Batteries	Thad Druffel	10/28/20	Conn Center
59	21037	SnO <sub>2</sub> top contact for perovskite solar cells	Thad Druffel	11/02/20	Conn Center
60	21026	Electrochemical Reduction of Flue Gas CO <sub>2</sub> to Commercially Viable C <sub>2</sub> - C <sub>4</sub> Products	Joshua Spurgeon	11/04/20	Conn Center