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7th International Conference on

GREEN CHEMISTRY & TECHNOLOGY

June 18-20, 2018 | Dublin, Ireland

DAY 1

Keynote Forum

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Ahindra Nag, J Ind Environ Chem 2018, Volume 2 | DOI: 10.4066/2591-7331-C1-001

Ahindra Nag

Indian Institute of Technology Kharagpur, India

Biography

Ahindra Nag is an Associate Professor of Organic Chemistry in Chemistry Department, Indian Institute of Technology, Kharagpur, India. He has 32 years of teaching and research experience. He has published 80 journal papers and 10 text books. He has guided 10 students and was Visiting Scientist and Visiting Professor in different universities such as Taiwan (Academia sinica), Rome (Campobossa) and America (Tennessee).

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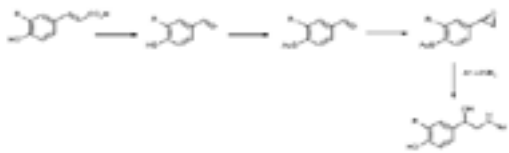
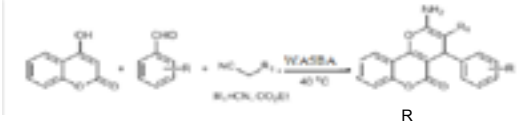
GREENER PROTOCOLS BIOLOGICAL AND PHARMACEUTICAL COMPOUNDS

β-amino alcohols and its derivatives are the versatile intermediates for synthesis of biologically active natural compounds. For ring opening of epoxides, several groups have been used various type of catalyst like lewis acids, metal salts, lanthanide halides, triflates, boranes, heterogeneous catalysis, ionic liquids and alumina. But we have synthesized these derivatives by synthesis of new type of epoxides by using this below mentioned synthetic route (Scheme 1), Where ACC juice has been used. Again, we are interested to synthesize biscoumarins and pyranocoumarins which have also biological and pharmaceutical applications. Biscoumarin and bis indoyl methane which can be used to treat anaphylaxis, cardiac arrest and superficial bleeding has been synthesized using waste material (Scheme 2).

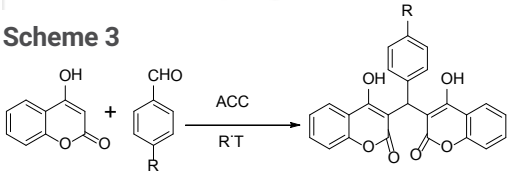
Scheme 1



Scheme 2



Scheme 3



Scheme 4

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Jwo-Huei Jou, J Ind Environ Chem 2018, Volume 2 | DOI: 10.4066/2591-7331-C1-001

Jwo-Huei Jou

National Tsinghua University, Taiwan

HUMAN AND ECOLOGICALLY FRIENDLY CANDLELIGHT OLED

Blue light enriched white light imposes threat to human health and ecosystems. Specifically, extensive use of electric light at night (LAN) might cause sleep disorder, obesity, diabetes, cardiovascular diseases, and cancers of breast and prostate. We will demonstrate that blue light hazards can be minimized by the use of candlelight OLED, which is much safer from retina protection perspective and better from melatonin generation perspective. Importantly, the human friendly blue light-less OLED is also found to attract much lesser insects after dusk. Lighting Renaissance is likely to take place and lighting history to be written with such an innovative lighting measure.

Biography

Jwo-Huei Jou is a professor of the Department of Materials Science & Engineering in National Tsinghua University, Taiwan, and the president of the Chinese Organic Electronics Association. He received his Ph. D in Macromolecular Science and Engineering Program from University of Michigan in 1986. He joined IBM-Almaden Research Center USA as a Visiting Scientist from 1986-88. Jwo-Huei Jou has his expertise in high-efficiency organic light emitting diodes (OLEDs), polymer, thin film stress, and expert system applications. He is a pioneer of the natural light-style OLEDs, and has received a prestigious "The IDA lighting design award" from the International Dark-Sky Association, USA for his "candle light-style OLED" invention.

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DAY 2

Keynote Forum

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Tatjana Stevanovic, J Ind Environ Chem 2018, Volume 2 | DOI: 10.4066/2591-7331-C1-001

Tatjana Stevanovic
Université Laval, Canada

POLYPHENOLS FROM CATALYTIC ORGANOSOLV PROCESS: ANTIOXIDANTS AND CARBON FIBER APPLICATIONS

The complete transformation of forest biomass is at centre of our studies. The patented catalytic process was developed in order to remove the extractable polyphenols from forest biomass prior to pulp. The objective of the pre- extraction is dual: to remove the polyphenols soluble in ethanol-water, which could contaminate the catalyst used in delignification process, but also to get access to valuable antioxidant molecules with multiple bioactive properties. We have applied this process on trembling aspen wood. Components from pre-extraction step have revealed several polyphenols, some of which have been determined to have high antioxidant capacity. Organosolv lignin produced in this research was examined for use as carbon fiber precursor, as it can be spun both in molten form and from solution, by electrospinning. The stabilized lignin fiber obtained by spinning in molten form yielded a high carbon content carbon fiber. The mechanical properties of the carbon fiber spun from organosolv lignin alone, without any polymer blending, were determined to have mechanical properties which are better than those published on other carbon fibers based on lignins. The polyphenolic constituents of lignocelluloses which are actually defining their woody nature are offering the perspective of very valuable utilisations. All polyphenols isolated from aspen wood, were analyzed by FT-IR, NMR, HPLC, GPC, GC-MS, DSC, TGA and XPS.

Biography

Tatjana Stevanovic has completed her undergraduate and graduate studies up to PhD at the University of Belgrade at which she was teaching Wood Chemistry and Chemical Transformation of Wood until 1997. Since then she is teaching these same cources at Laval University and performing research on bioactive polyphenols as well as on polymeric applications of lignins. She has published numerous scientific papers and book chapters as well as Wood chemistry textbook. She has deposited a international patent on new organoslv process leading to highly pure lignin along with cellulose pulp and bioactive extractives from pre-extraction.

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Andres Moreno Moreno, J Ind Environ Chem 2018, Volume 2 | DOI: 10.4066/2591-7331-C1-001

MICROWAVE CATALYTIC CONVERSION OF LIGNOCELLULOSIC WASTES INTO BIOFUEL PRECURSORS

Andres Moreno Moreno

A. Lorente, A.J. Huertas-Alonso, M. Salgado, C. Lucas-Torres, M.P. Sánchez-Verdú and B. Cabañas

University of Castilla–La Mancha, Spain

Biography

Andres Moreno Moreno has completed his PhD degree in Organic Chemistry from Universidad de Castilla-La Mancha, Spain in 1990. He carried out Post-doctoral studies at University of Oxford and University of Paris-Sud. He became Assistant Professor in Organic Chemistry in 1995. In 2015, he obtained a full-time Professor position by Spanish Educational Government.

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Biomass has been recognized as the most promising renewable resource for the production of high value bio-chemicals, as 5-hydroxymethylfurfural (HMF) and levulinic acid (LA) which are biofuel precursors. Our research group works on agro food and lignocellulosic residues focusing on their carbohydrate contents. Carbohydrates are dehydrated in acidic medium at high temperature to obtain HMF and LA, which are interesting compounds as they involve in obtaining renewable precursors for the production of biofuels. The aim of this work involves the carbohydrate dehydration from the beer bagasse and the study of other agro-industrial wastes. Thereby environmentally friendly techniques, such as microwave radiation as energy source will be used for meeting some of the Green Chemistry Principles. Thus, we have obtained good HMF and LA recoveries, calculated by quantitative NMR (qNMR) and we compare these results when the reactions are carried out with conventional heating. Moreover, we have been able to obtain biofuel precursors from waste using a green and environmentally friendly energy such us microwave radiation. Also, we have developed different methods to obtain one precursor or other changing experimental conditions. As conclusion, a method based on Green Chemistry Principles has been developed, being clean and environmental-friendly practices and thanks to the use of microwave energy. This method approaches the problem of the sugarcane bagasse, beer bagasse and melon rind as a residue and tries to palliate it; also they have been transformed in a source of biofuel precursors.

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Apampa O Ahmed

Moshood Abiola Polytechnic, Nigeria

Biography

Apampa O Ahmed is a professional Civil Engineer and Academician with a total of 30 years' experience in industry, teaching and research. He holds a PhD degree in Civil Engineering and is currently Principal Lecturer and the Director, School of Engineering at the Moshood Abiola Polytechnic, Abeokuta, Nigeria. He has over 30 published works to his credit and several other unpublished technical reports and engineering analysis works. He is a Fellow of the Nigerian Society of Engineers, an Examiner at Civil Engineering Professional Examinations in Nigeria as well as Editorial Adviser to a number of conference and journal publications.

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AN INVESTIGATION OF THE MICROSTRUCTURE OF A LATERITIC SOIL STABILIZED WITH CORN COB ASH

The use of bio-ash as partial substitute for cement in civil engineering works, has the potential to reduce the overall net carbon dioxide contribution of the construction sector to the environment. Studies in the chemical stabilization of lateritic soils indicate the possibility of a relationship between the cation exchange capacity of lateritic soils and the optimal amount of pozzolanic ash required to affect a modification for soil stabilization purposes. This study investigates this further, using corn cob ash (CCA) and an A-2-7 lateritic soil as case study. Metallic oxide composition of soil and CCA respectively were determined using the X-ray fluorescence equipment from which the cation exchange capacity of the soil was determined. Various samples of soil-cement, soil-cement-CCA and soil-CCA were thereafter prepared and subjected to unconfined compressive strength (UCS) test, following the procedures of BS 1377-7:1990. Attempts to confirm the presence of silicates of potassium (K_2SiO_3) and magnesium ($M_8Si_8O_{20}(OH)_8 \cdot 12H_2O$) in the stabilized soil using Scanning Electron Microscopy (SEM) examination were inconclusive. The cation exchange capacity of the soil was theoretically determined as 1.45%, which is close to the CCA content of 1.5% that returned the highest UCS value. Further work is required to account for the different roles of potassium, calcium and magnesium (usually present in pozzolanic ash) in the stabilization of lateritic soils.

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