OMICS International
conferenceseries.com

J Material Sci Eng 2016, 5:2 (Suppl)
http://dx.doi.org/10.4172/2169-0022.C1.012

International Conference and Exhibition on
Materials Chemistry
March 31-April 01, 2016 Valencia, Spain

The use of polymers and biopolymers to make arid and semi-arid land suitable for agriculture

Maghchiche Abdelhak
Batna university, Algeria

The use of polymers as a soil-stabilizer additive has expanded significantly in agricultural use to control soil degradation and desertification and also to improve arid and semi arid soils. This research was conducted to determine the effects of different synthetic polymers and biopolymers at low concentration (0.03%–1%) at arid and semi-arid soil of North Africa. Polystyrene, polyacrylamide; cellulose and the mixture of polyacrylamide with other polymers were characterized by viscosity, infrared spectroscopy, X-ray Diffractometry, Thermal Analysis (TG and DSC) and Scanning Electron Micrographs (SEM). The results showed that the polymer composites (10 mg/L polyacrylamide and 0.5 g/L cellulose) in soil could improve better soil physical properties and augment 60% water retention at arid soils compared with application of any other polymer at the same concentration. This work can help to improve the productivity of arid and semi arid soils by using low concentration of biopolymers from plant fibers and polymers from synthetic plastics compounds or wastes plastic industry to augment water holding capacity improve the physical properties of soils by binding soils particles together reducing the losses of water by evaporation and deep percoloration, and to make valuable products of plastic industry and renewable organic fibers to protect environment.

amaghchiche@yahoo.fr

Exploration and development of Perylenebisimdes (PBIs) as potential memory units with magnetic signalling

Masood Ayoub Kaloo, Ruchika Mishra and Jeyaraman Sankar
Indian Institute of Science Education and Research, India

Perylenebisimides (PBIs) are highly rhobust, extensively conjugated organic materials with unique optical and redox properties. Presence of imide functionalities impart PBI a highly electron-deficient nature and hence n-type semiconductivity. The dyes can be reduced to corresponding radical anions, hence potential to store electrical energy. For the first time, we attempted to reduce this dye via interface with anions in organic media (THF, DMSO). A drastic modulation of their absorption and emission properties was noticed in solution (panchromatic UV-Vis-NIR and Quenching). The reduction processes was proposed to be a Single Electron Tranfer (SET) from anion to PBI. SET phenomenon was further facilitated by incorporation of electron-with drawing substituents in bay region. The reduced PBIs were regenerated through specific chemical inputs with high redox-potential like (Zr4+, Fe3+, etc.,). The anion/cation executed switching behaviour was fully established through EPR, apart from electrochemistry and spectroscopy (absorption and emission). The stablilty of EPR active anion radical state in TLC or colum chromatography, was explored for moleculary memory. The reversible and reconfigurable magnetic sequences were visualized in the form of a feedback loop, with EPR active outputs (μa), demonstrating a data storage feature with the "write–read–erase" function. The phenomenon of bi-stable behaviour "magnetic to non magnetic" presented in this study signify a promising asset for futuristic non-volatile memory. In this presentation, design, development, exploration of PBIs as materilas of choice with promising information storage capability will be discussed. In addition to this, their structural tuning and interation with anions will be throughly presented.

masood@iiserb.ac.in