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Welcome

Dear Participant,

On behalf of the organizing committee, it gives us great pleasure to extend a warm and hearty welcome to the participants of RTACR-2017.

Over the years, Chemistry has made major studies in many different disciplines. The influence of chemistry could be witnessed across disciplines such as Physics, Material science and Biology, in addition to others. It was therefore felt by the organizing committee to organize sessions based on different themes viz, Nano science, Photoscience, Computer aided drug design & Medicinal Chemistry and Material science, wherein chemistry has made major impact over the years. We do hope that this would be a helping hand for the researchers for further inclusive growth with interdisciplinary research.

We have arranged inaugural session, and invited lectures in different themes mentioned above. The lectures by the young researchers and poster sessions will also be held in the seminar hall of the college.

We wish you a professionally rewarding and enjoyable RTACR-2017 seminar.

Sincerely yours,

Dr. Ambili Raj D B (Convenor)

Dr. S. V. Manoj (Joint-Convenor)

T. R. Sarunkumar (Joint-Convenor)

PREFACE

The National Seminar on 'Recent Trends in Advanced Chemistry research-2017' (RTACR-2017) is being organized by The PG & Research Department of Chemistry, Sree Narayana College, Kollam on 25th & 26th May 2017 at S N College, Kollam. The RTACR-2017 seminar aims to focus on the current status and the future projections of research in various frontier areas in Chemistry. The organization of the seminar is based on the outstanding and significant research carried out by scientists from various parts of India. The Poster and Oral presentation sessions give ample opportunities to the young minds to interact with others and to benefit from exchange of ideas for the betterment of their research activity.

We thank the National Advisory Committee members of RTACR for their valuable suggestions in organizing the seminar. We also thank the sponsors of the symposium, SERB, Department of Science & Technology, Govt. of India and Kerala State Council for Science, Technology & Environment (KSCSTE), Govt. of Kerala for providing financial Support. On behalf of all the organizing committee members, it gives me great pleasure to wish all the participants an eventful and academically successful RTACR-2017 Seminar.

Dr. Ambili Raj D B

Covenor, RTACR-2017

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Sugarcane Bagasse Ash: A Renewable Source Of Silica

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Abstract

Sugarcane bagasse is an agricultural waste which can be used as a natural source of silica gel. Natural silica claimed to be safe in handling, cheap and can be generate from cheap resources like agricultural wastes. The result indicated that the amount of SiO₂ present in the raw sugarcane bagasse ash was 53.10% while the silica composition in acid treated sugarcane bagasse ash was 74.3%. The isolated silica was characterized by various techniques such as XRD, FTIR, and SEM

Keywords

Bagasse ash, biomass, silica gel, extraction, post treatment.

Introduction

Sugarcane bagasse is the cellulose fiber remaining after the extraction of the sugar bearing juice from sugarcane. This type of residues from agricultural waste is abundant and might create disposal problem to the environment due to odour generation, attraction of pest that might affect human health and so on. With this limitation, its application has been widely explored as a primary fuel source and additive in construction industries. Burning of bagasse as a natural bio-fuel to generate energy results in the waste product called sugar bagasse ash (SCBA), which is very harmful to the environment. But SCBA is rich in silica hence it can be used to extract silica by an eco-friendly method. Silica gel can be used as adsorbent, raw material for ceramic, cements and concrete additives, catalyst, paint, cosmetics, pharmaceuticals etc. This wide spread applications of silica are due to its low toxicity, high chemical and physical stability, large surface area to volume ratio. Nanostructured silicon materials, because of their unique properties and small size, have promising applications in a range of new technologies, such as nanoelectronics, photonics, energy harvesting, and energy storage. The major components of sugarcane bagasse are organic materials such as cellulose (50%), hemicelluloses (25%) and lignin (25%). etc. The metallic impurities can be eliminated by pre-treatments using HCl prior to combustion of the bagasse.

Method