

**NATIONAL SEMINAR ON
RECENT TRENDS IN ADVANCED
CHEMISTRY RESEARCH (RTACR - 2017)**

**(SPONSORED BY DST(SERB)& KSCSTE)
THURSDAY 25th AND FRIDAY 26th MAY 2017**



Organized By

**PG & RESEARCH DEPARTMENT OF CHEMISTRY
SREE NARAYANA COLLEGE, KOLLAM**

Affiliated to University of Kerala

(Re accredited by NAAC with 'A' grade)



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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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Synthesis Of Biogenic Silica Nano Particles

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ABSTRACT: An eco-friendly method has been adopted to synthesize silica nano particles from rice husk, one of the highest volume residual biomass of paddy crop. The chemical composition and amorphous nature of resultant particles were confirmed by FTIR as well as XRD analysis. The average particle size was estimated as to be 55 nm. Biogenic silica has wide range of applications in medical and biotechnological fields including drug delivery.

Introduction

Rice husk is the outer covering of rice grain and is abundantly available in rice producing countries. In recent years it has been utilized as a low value added material, such as fertilizer additives, and land filling or paving materials [1]. The most common treatment method of rice husk is burning, which leads to serious air pollution and resource waste, rice husk ash (RHA). It contains large amount of silica – a valuable inorganic multipurpose chemical compound [2, 3]. Because of their unique properties and small size, nano structured silicon materials gain considerable attraction in a series of new technologies i.e. nanoelectronics, photonics, energy harvesting, and energy storage [1].

Different silica synthesis procedures such as sol-gel, micro emulsion, microwave-assisted acid catalyst, vapour techniques and recently some greener techniques - to remove the application of hazardous precursors - have been reported [2, 4]. The present study focussed on the synthesis of silica particles from rice husk using a simple and cost effective extraction method. XRD and FTIR analysis were used to evaluate the prepared silica particles.

Materials And Methods

Rice husk was collected from a rice mill located at Kuttanad. AR grade HCl and NaOH were purchased from Merck and used as received without any further purification. De-ionised water was used throughout the experiment.

The procured rice husk was washed with distilled water and dried under sunlight. The dried samples were treated with 0.5 N HCl with constant stirring at 60 °C and filtered. Residue obtained was dried in a hot air oven at 110 °C for about 24 hours followed by the ignition at 600 °C in a muffle furnace. About 5g of resultant RHA was dispersed in 60 ml de-ionised water. Adjusted the pH to 1 by using 6N HCl and stirred for 2 hours. Whatman No.41 ashless filter paper was used to filter the solution. The residue obtained was washed with water and subsequently dispersed in 60 ml 1N NaOH solution. The resultant solution was boiled with