(16)

PROCEEDINGS

National Workshop
on
Instrumentation Techniques
for
Research in Chemical Sciences
(WITRCS - 2017)

22-23 December, 2017

Organized by
Department of Chemistry
Kanoria Mahila PG Mahavidyalaya
Jawahar Lal Nehru Marg,
Jaipur, Rajasthan

Sponsored by
Association of Chemistry Teachers;
Mumbai, Maharashtra
Department of Science & Technology
Jaipur, Rajasthan

Proceedings
Of the National Workshop on

Instrumentation Techniques for Research in Chemical Sciences

(WITRCS- 2017)

22-23 December, 2017

Editors:

Dr. Kumud Tanwar
Department of Chemistry
Kanoria Mahila PG Mahavidyalaya,
J. L. N. Marg, Jaipur, Rajasthan

Dr. Atul K. Bhatnager
Department of Chemistry
B. B. D. Government College
Chimanpura (Shahpura), Jaipur

Dr. Ashok K. Kakodia
Department of Chemistry
S. G. G. Government College
Banswara, Rajasthan

Published by: **Convener WITRCS – 2017, Kanoria PG Mahila Mahavidyalaya, Jaipur**
ISBN: 978-93-5291-367-1.

Principal
Kanoria PG Mahila Mahavidyalaya
JAIPUR

ISBN: 978-93-5291-367-1.

ISBN: 978-93-5291-367-1.

Principal
Kanoria PG Mahila ... Vidyapeeth
JAIPUR

An Impact of Nanotechnology on Water Purification

Medha Babel
Department of Chemistry,KMM,Jaipur

Abstract
Nanotechnology exploits nanoscopic materials for nanofiltration of water.NanoFiltration isused for better water purification. IN Nanotechnology,nanomembrane are used for thesoftening the water and removal of contaminants. The important application of nanofiltration (NF) is lower energy consumption and higher flux rates. Nanotechnology will create incredible opportunities for improvement of water purification.

Keywords: Nanomembrane, Nanofiltartion, Contaminants, Consumption, Flux Rate.

INTRODUCTION:

Nanotechnology plays a vital role in water purification.Nanotechnology is defined as a branch of engineering that deals with creating objects smaller than 100 nm in size. It is vision of building objects atom by atom, molecule by molecule[1,2].

To address the undeniable need of pure water, various water treatmenttechnologies have been proposed such as centrifugation, separation, reverse osmosis (RO), Nanofiltration (NF), Adsorption, Electrolysis, Ultrafiltration[3]. Nanotechnology is used forremoval of sediments, chemical effluents, charged particles, bacteria. Membrane filtration allows the passage of water solvent but rejects solutes, gases, fluids and various particles present in the polluted water.

Nanomembranes

Nanofiltration technology is widely used for in waste water treatment due to its low energyconsumption, in which the properties on Nanofiltration membranes (NFMs) are of vitalimportance[4-9].Graphene Nanomembrane is used for nanofiltration as it is very thin innature[7]. Ultrathin (22-53 nm thick) graphene membranes with 2D Nanochannels is successfully applied as NFMs for water purification.Metal and metal oxides are a diverse class of nanomaterials which are applied for water treatment Zerovalent Iron, TiO_2[8].The effectiveness of various metal and metal oxides membrane for the removal of phosphate from water.A thin low cost Nanofiltration is formed by M-Phenylenediamine (MPD) and Trimesoyl chloride (TMC) and costed on both sides of a Polyacrylonitrile (PAN) membrane.

Merits of Nanotechnology:

The main merit of using Nano filters is that less pressure is required to pass water across thefilter and can be more easily cleaned by back flushing. More surface are and small volume of Nanoparticles make them effective for water purification. Nanoparticles are more stable and durable. The nanoparticle based technology is very important in increasing water quality standards and removal of emerging pollutants.

CONCLUSION:

The challenge of the growing Nanofiltration technology is to ensure that Nanotechnologiesevolve as tools that enable sustainability rather than environmental liabilities. Nano basetechnology may become very important specially for the removal of emerging pollutants and chemical,biological contaminants[9-11].

REFERENCES:

1. Feynman R., An invitation to enter a new field of Physics, *Engineering and Science.*, 1960 23,22-36.
2. Drexler K.E., Molecular Engineering An approach to the development of general capabilities for Molecular manipulation,*Proc Nan Acad Sci USA*, 1981, 78-5275-5278.
3. Gupta V.K., Ali I., Saleh T.A., Nayak A., Agarwal S.,Chemical treatment technologies for waste-water recycling an Overview, *RSC Advance* ., 2012,2,16, 6380-6388.
4. Agenson K.O., Oh J.I., Urase T., Member J..Sci. 2003, 225,91.

ISBN: 978-93-5291-367-1.