

Author's Accepted Manuscript

Recent Advances and Developments on Integrating
Nanotechnology with Chemiluminescence Assays

Ashish Tiwari, S.J. Dhoble



PII: S0039-9140(17)31233-X
DOI: <https://doi.org/10.1016/j.talanta.2017.12.031>
Reference: TAL18167

To appear in: *Talanta*

Received date: 11 November 2017
Revised date: 10 December 2017
Accepted date: 11 December 2017

Cite this article as: Ashish Tiwari and S.J. Dhoble, Recent Advances and Developments on Integrating Nanotechnology with Chemiluminescence Assays, *Talanta*, <https://doi.org/10.1016/j.talanta.2017.12.031>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Recent Advances and Developments on Integrating Nanotechnology with Chemiluminescence Assays

Ashish Tiwari ^{a*}, S.J. Dhoble^b

^aDepartment of Chemistry, Naveen Government College, Pamgarh 495554, India

^bDepartment of Physics, RTM Nagpur University, Nagpur, 440033, India

*Corresponding author – E-mail: ashisht048@gmail.com

Abstract

Chemiluminescence (CL) techniques are extensively utilized for detection of analytes due to their high sensitivity, rapidity and selectivity. With the advent of nanotechnology and incorporation of the nanoparticles in the CL system has revolutionized the assays due to their unique optical and mechanical properties. Several CL-based reactions have been developed where these nanoparticle based CL sensors have evolved as excellent prospects for sensing in various analytical applications. This review article addresses the nanoparticles based CL detection system that are recently developed, the mechanisms has been summarized and the role of luminophors have been discussed. This article critically analyzes the optimal conditions for the CL detection along with quantitative assessment of the analytes. We have included the use of semiconductor nanoparticles, metal nanoparticles, graphene based nanostructures, mesoporous nanospheres, layered double hydroxides, clays for CL detection. The scope and application of these nanoscale material based CL system in various branches of science and technology including chemistry, biomedical applications, pharmaceuticals, food, environmental and toxicological applications has been critically summarized.

Graphical abstract

Download English Version:

<https://daneshyari.com/en/article/7676731>

Download Persian Version:

<https://daneshyari.com/article/7676731>

[Daneshyari.com](https://daneshyari.com)