# 2018

BOOK
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CHAPTER

Synthesis and application of Schiff based metal complexes of thiosemicarbazide in electrochemical sensors

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Graphical Abstract

Schiff Based Metal Complex

ISE Set-up
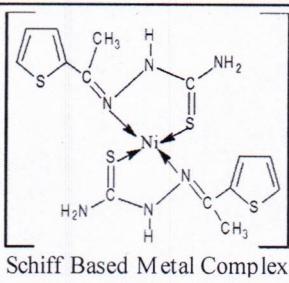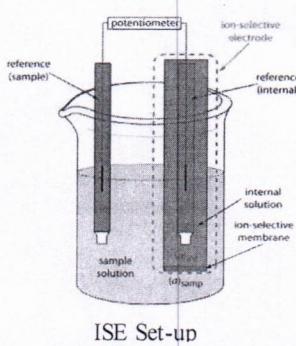
Abstract

Schiff based metal complexes of thiosemicarbazide with transition metals such as Zn, Cd, Cu, Pb etc. have received much attention because of their significant electrochemical activity in Ion selective electrodes. Thiosemicarbazide based schiff base was synthesised by using acetyl-2-thiophene and thiophene-2-aldehyde in ethanol solvent. These ion selective electrodes can be employed to develop chemical sensors for sensing metal ions in solution. Performance of these sensors can be checked by measuring the effect of pH, response time, lifetime and selectivity study. These sensors found useful in potentiometric titrations and for the determination of ions in water samples.

Introduction

In recent years there has been a growing need or desire for constructing chemical sensors for fast and economical monitoring of our environmental samples especially for heavy metal ions in real time. Polymeric membrane ion selective electrode (ISEs) provides one of the most powerful sensing methods because it is possible to select various sensory elements. Membrane based Ion Selective Electrodes (ISE) are appropriate for this purpose because they are highly selective for inorganic ions and they are easy to develop. Metal complexes of thiosemicarbazones with transition metals have received attention because of their biological and electrochemical activity including antitumor, antibacterial, fungicidal and anticarcinogenic properties, including as ion selective electrode as well.

Materials and Methods

All the chemicals used were of analytical grade (AR) and of the highest purity. They included 2-acetyl thiophene (CDH), thiophene-2-aldehyde (CDH), thiosemicarbazide (CDH) and semicarbazide (CDH). Metal salts were purchased from E. Merck and were used as received. All standard solutions of metal salts and buffers were freshly prepared in double distilled deionized water.

Results and Discussion

The response of different metal ions was plotted as the negative log of concentration and the potential values obtained for different ions.

The basic characteristic parameters for determining the analytical property of an ion selective electrode were then measured, such as:

- Range of Linear response and Slope
- Effect of pH
- Response time and Reversibility
- Selectivity
- Sensitivity
- Limit of Detection
- Lifetime of ISEs

Conclusions

The ion selective electrode sensors exhibits Nernstian slope and a wide linear working range. These metal complex based sensor electrodes can be used in wide pH range of solutions and can be successfully used to determine the concentration of metal ions in wastewater samples.

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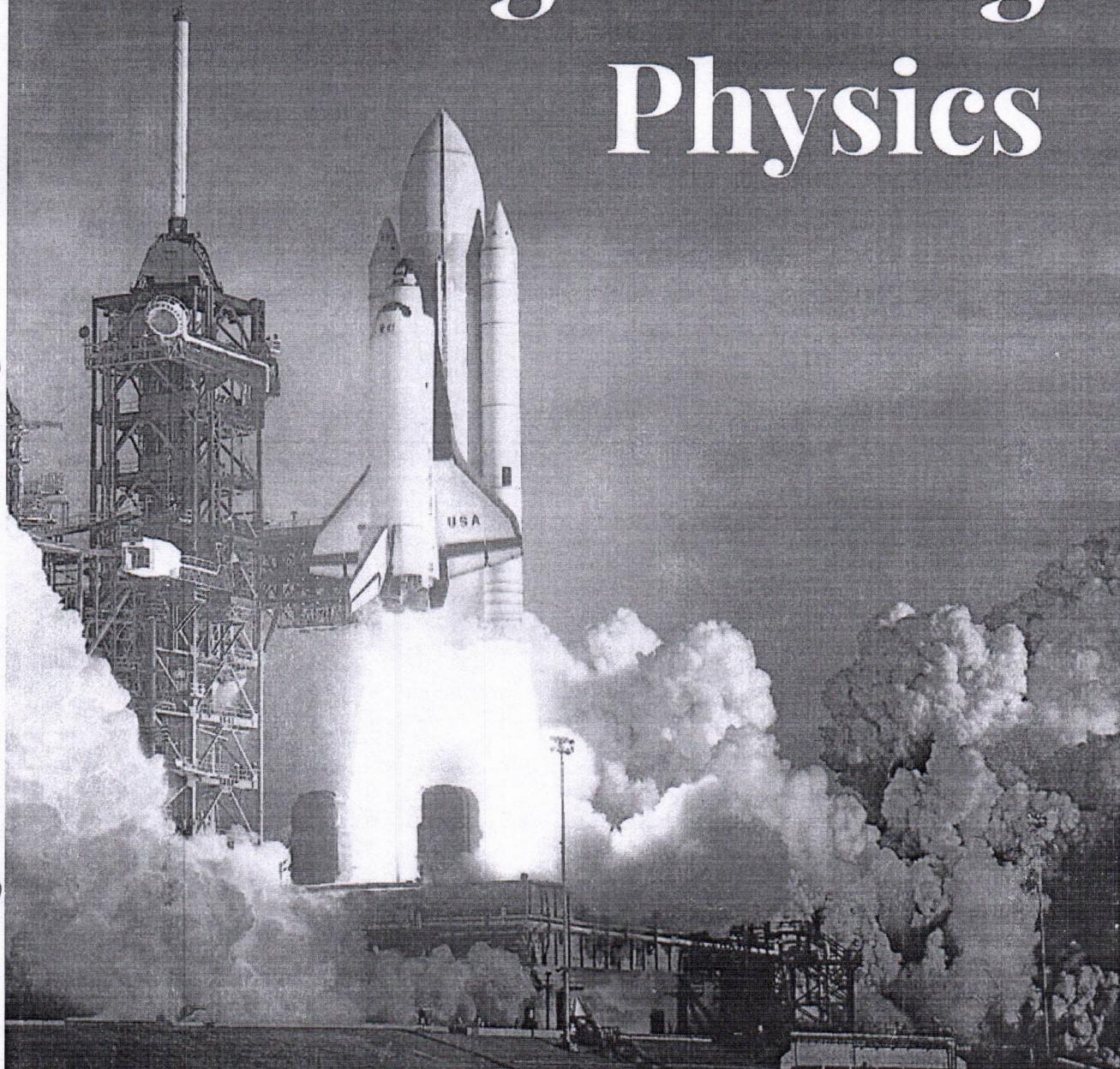
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Brief Contents

Multifunctional Nanocarriers for Contemporary Healthcare Applications

Md. Abul Barkat (K.R. Mangalam University, India), Harshita A.B. (K.R. Mangalam University, India), Sarwar Beg (Jubilant Generics, India) and Farhan J. Ahmad (Jamia Hamdard, India)
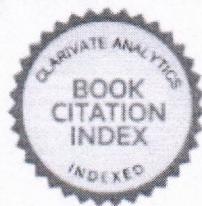
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Evaluation, Selection and Ranking of Software Reliability Growth Models using Multi criteria Decision making Approach

Publisher: IEEE   Cite This   📄 PDF

Aakash Gupta ; Neeraj Gupta ; Rakesh Garg ; Ramesh Kumar   All Authors

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Abstract

Document Sections

I Introduction

II Literature Review

III Entropy Distance Based
Approach

IV Model Development And
Demonstration

Abstract:

The evaluation of Software Reliability Growth Models (SRGMs) is inherently complex because of the lack of objective measures. Since the evaluation of SRGMs may involve multiple selection criteria, this selection problem can be represented as a multiple criteria decision making (MCDM) problem. This research presents an MCDM-approach to rank a selection of various SRGMs in the domain of software reliability. An investigational study is designed to show the applicability of proposed method using Entropy Distance Based Approach (EDBA), sixteen SRGMs and seven selection criteria over a real time failure data set. The implementation of EDBA provides the comprehensive ranking of the alternatives i.e. SRGMs on the basis of their composite distance values. The result of the present study shows the effectiveness of the MCDM method in SRGMs evaluation process and depict that "Generalized Goel" model is ranked at the top position (Rank-I) having smallest composite distance value where as "Inflection S- Shaped" model is ranked at last position (Rank-16) due to having the largest composite distance value on the selected failure data set.

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Non-Saturated Heterogeneous Mobile Ad-hoc Network Throughput Analysis Considering Max Retry Limit and Max Contention Window Size

Publisher: IEEE   Cite This   🄿 PDF

Mukta ; Neeraj Gupta   All Authors

33

Full

Ⓡ ⌄ © ⚠

Abstract

Document Sections

I Introduction

II Analytical Model and Analysis

III Experimental Setup

IV Conclusion

Authors

Abstract:

Performance analysis of IEEE 802.11 wireless ad-hoc networks had attracted lots of analytical researches since last decade. A lot of analytical models have been designed considering homogeneous conditions. In the current work, we developed a mathematical model for analyzing the system throughput based on Markov's chain incorporating the limit on contention window size and packet drop after short retry limit get exhausted. The approach is designed for non-saturated heterogeneous conditions, however could be easily adapted for saturated networks by considering probability of at least one packet waiting for transmission at the start of counter decrement as 1. Simulations are carried out in network simulator and are compared with other existing analytical approaches. The experimental outcomes verify the contribution in terms of more accurate prediction of network behavior.

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Queueing Analysis of Migration of Virtual Machines

Surabhi Sachdeva ✉ & Neeraj Gupta

Conference paper | First Online: 12 December 2018

937 Accesses

Abstract

Live migration is a prerequisite feature of virtualization that allows transfer of a working virtual machine from one data center to another. It is a useful tool for optimization of resources and is one of the issues of research. The work [22] proposes an analytical model based approach for quality evaluation of cloud by considering the rejection probability, expected request completion time, system overhead as key metrics. In this paper, we are exploring only rejection probability of jobs. The work in [22] has been done in two phases and M/M/1/K queueing model has been applied to the first phase of the work in order to find the rejection probability

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Hybrid Multi-Attribute Decision Making Approach: Extension of Distance Based Approach

Publisher: IEEE   Cite This   📄 PDF

Ashu Bansal ; Neeraj Gupta ; Rakesh Garg   All Authors

68

Full

Abstract

Document Sections

I Introduction

II Entropy Method

III Existing Distance Based Approach

IV Hybrid Entropy Distance Based Approach

Abstract:

Performance evaluation and selection of the various alternatives over multiple conflicting selection criteria is highly confronted to solve the realistic problems all over the world. The concept of multi-attribute decision making (MADM) is usually acclimated to make some precise and comprehensive decision. Numerous MADM approaches have been established in the past for solving such problems. The evaluation of the alternatives by calculating the distance from the optimal point i.e. Distance Based Approach (DBA) is an effective and efficient MCDM method. In this research a hybrid MCDM approach, namely Entropy Distance Based Approach (EDBA) has been developed by extending DBA with Entropy method.

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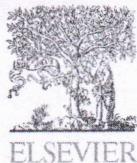
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Study of Globus Pallidus External and Sub Thalamic Neuron for various currents

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[c]*The Northcap University, Huda, Sector 23A, Gurgaon,Haryana 122017, India*

Abstract

(GP) – The External globus pallidus neuron & (STN) – The Subthalamic nucleus in Parkinsonism synchronise their firing in time with dawdling or superior oscillations in cortex. An extensive variety of electrophysiological performance characteristic of rat subthalamic neurons is exhibited by the model cell. Measured by increased thrashing of movement, tremors, and communication slurring, Parkinson's disease (PD) is a devastating motor scheme disorder. Independent wavering of both the neurons underlies stimulant movement and is essential for synaptic incorporation. PD characteristic is the abnormal low-frequency rhythmic bursting in neurons. This infiltrate work presents a considerable measure forward in GPe and STN research and might be effectively implemented into experimental exercise.

Keywords: Parkinsonian oscillations; Sub thalamic nucleus; applied current; Membrane potential; Membrane capacitance

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