NOTATIONS AND ABBREVIATIONS

Λₘ - Molar conductance
υ - Frequency
χₐ - corrected magnetic moment
χ_dia - Diamagnetic correction
χ₇₆₈ - gram susceptibility
χₘ - molar magnetic susceptibility
μ_eff - effective magnetic moment
Opdac - 4-(1-H-1,3-benzimidazole-2-yl)-1,5-dimethyl-2-phenyl-1-2-dihydro-3-H-pyrazol-3-one
Ipbh - 4-isopropylbenzaldehyde[N-(3-oxo-3,4-dihydro-2-quinoxaliny]hydrazone]
mL - milli litre
h - hour
EPR - electron paramagnetic resonance
FTIR - fourier transform infrared spectrum
TGA - thermogravimetric analysis
DTA - differential thermal analysis
T_f - final temperature
T_i - initial temperature
UV-vis - ultra violet –visible spectrum
Å - Angstrom
List of Publications


4) Synthesis and spectroscopic studies on Cu(II) complexes of 4-((1H-1,3-benzimidazole-2-yl)-1,5-dimethyl-2-phenyl-1-2-dihydro-3-H-pyrazol-3-one. P.M. Vimal Kumar and P.K. Radhakrishnan* (under publication)

5) Iron(III) complexes incorporating bidentate NO-donor pyrazolone ligand: Synthesis and Characterization. P.M. Vimal Kumar and P.K. Radhakrishnan* (under publication)

6) Synthesis and spectroscopic characterization of some novel adducts of copper(II) salts with bidentate NO-donor Schiff base. P.M. Vimal Kumar and P.K. Radhakrishnan* (under publication)
7) Coordination properties of 4-isopropylbenzaldehyde[N-(3-oxo-3,4-dihydro-2-quinoxalinyI)hydrazone] with iron(III) and cobalt(II) salts.
P.M. Vimal Kumar and P.K. Radhakrishnan* (under publication)

**Presentations in International Conferences**

1) Nickel(II) complexes of 4-(1-H-1,3-benzimidazole-2-yl)-1,5-dimethyl-2-phenyl-1-2-dihydro-3-H-pyrazol-3-one.
P.M. Vimal Kumar and P.K. Radhakrishnan* 3rd Asian Conference on Coordination Chemistry, (17-20th Oct., 2011), New Delhi, India.

2) Synthesis and structural characterization of Co(II) complexes of 4-isopropylbenzaldehyde[N-(3-oxo-3,4-dihydro-2-quinoxalinyI)hydrazone]
P.M. Vimal Kumar and P.K. Radhakrishnan* 3rd Asian Conference on Coordination Chemistry (17-20th Oct., 2011), New Delhi, India.
Chapter I

Introduction

In modern coordination chemistry, many different organic compounds are used as ligands. In spite of the tremendous variety of these ligand systems, typical structures are defined as a basis for the study of their coordination chemistry. Schiff base coordination complexes have attracted great attention over the past decades due to not only their facile synthesis but also their wide applications and accessibility of diverse structural modifications [1]. However, the rational creation of different metallosupramolecular structures from a single set of building units and metal ions controlled by external factors is still a challenging subject. Aggregation of molecular building units into metallosupramolecular structures with the use of organic building units and transition-metal ions as linkers has been a subject of considerable research interest in coordination chemistry and supramolecular chemistry. This is because of not only the beauty and diversity of the created structures but also their potential applications as functional materials. To date, a variety of metallosupramolecular species with different compositions and dimensional structures have been synthesized through variation of the building units and linking metal ions. Remarkable progress has been made in the area of molecular inorganic-organic hybrid compounds. These compounds hold promise as new materials with novel catalytic, magnetic, electronic and optical properties [2]. Schiff bases are significant class of compounds which can be used in a variety of studies, such as organic synthesis, catalyst, drug design [3-5] and models for active sites of