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LINKAGE

Department of Chemistry,
Yashwantrao Chavan College of Science, Karad

&

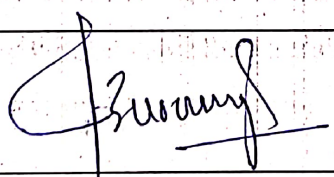
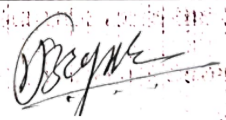
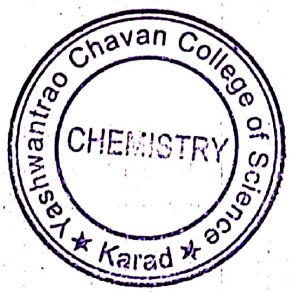
Department of Chemistry,
Jaysingpur College, Jaysingpur

Linkage is signed on 12th January 2022 between **Department of Chemistry, Yashwantrao Chavan College of Science, Karad** (First Party) and **Department of Chemistry, Jaysingpur College, Jaysingpur** (Second Party). It is agreed by First party and Second party to impart student exchange, guest lectures, study tours, instrument training and research to the students and to organize conference/seminars jointly. Both the parties have discussed in detail the areas of co-operation and mutually agreed to make the linkage. Now it is agreed by and between both the parties with the following terms and conditions.

Terms and Conditions:

1) Both the parties will extend their facilities to each other in the areas of student exchange, guest lectures, study tours, instrument training and research to the students and to organize conference/seminars jointly.
2) No rental charges or any other incidental charges, unless mentioned, shall be paid by both the parties for using the infrastructure facilities of each other.
3) The linkage will be valid for a period of five years starting from the date of signing this agreement and may be renewed for a further period of five years through mutual consent of parties.
4) This linkage may be terminated by either side by giving a three months notice to that effect in writing.

In witness whereof, the parties here have set this hands on the 12th January 2022

Party	**First Party**	**Second Party**
Institute	**Department of Chemistry, Yashwantrao Chavan College of Science, Karad**	**Department of Chemistry, Jaysingpur College, Jaysingpur**
Signature		
Name & Designation	Prof. Dr. S. H. Burungale Head, Department of Chemistry	Prof. Dr. B. M. Sargar Head, Department of Chemistry
Seal		

Monitoring and Assessment of Water Quality using Multivariate Statistics of Physico-chemical Parameters to establish Baseline Level around proposed Jaitapur Nuclear Power Plant (JNPP), India

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Abstract

This study illustrates the usefulness of multivariate statistical techniques to provide straightforward data interpretation as well as valuable insights of datasets to get better information about the water quality and helps to design monitoring networks for effective management of available water resources. In this study, Multivariate statistical analysis, Cluster analysis, Principal Component Analysis, Factor Analysis, Water Quality Index and Piper diagram are used to analyze the water data and to prepare the baseline of water parameters around the proposed JNPP. Piper diagram indicates that the primary salinity ("non-carbonate alkali") exceeds 50 % which means that the chemical properties of water are dominated by alkalies and strong acids. Water quality indices indicate that water is non-polluted and fully fit for drinking purposes.

Principal component analysis and factor analysis applied for water parameters point towards the common source of minerals and high level of dissolved organic matter. Trace metal analysis shows significant but little participation of zinc, copper, nickel, iron and barium in water quality. The baseline developed and the data obtained will be useful for the water quality analysis after post-plant operation in this region.

Keywords: Water, JNPP Region, Physico-chemical parameters, Multivariate Statistics, Baseline.

Introduction

Safe water is a basic human right and pre-condition for health and development, yet it is still denied to millions of people of the developing world. Poor sanitation and hygiene coupled with insufficient safe water cause water-related diseases leading to 3.4 million deaths per year and most of them are children[21,23]. India in 1974 enacted 'The Water Act' for prevention and control of water pollution to maintain and restore purity of water in the country. The act was further amended in 1992 and 2003. Currently, India's environment has become fragile and is of concern because of increasing industrialization, urbanization and growth in population[9]. Water quality expresses the suitability of water to sustain various uses and processes. Every use or process requires certain physical, chemical and biological characteristics of water. Physical and chemical parameters of water are easily defined and hence, criteria set for water quality are largely based on physical and chemical conditions of the water. Biological methods of analyzing water quality are based on a diversity index derived from information theory. These indices express the relative importance of species, also they are dimensionless and independent of the sample size collected.

Once the water gets contaminated, it is difficult to restore its quality. Consequently, directly or indirectly everyone gets affected. Heavy metal contamination is a major problem in several communities and agricultural areas. Commercial agrochemicals, savage water and industrial wastewater are the measured sources of heavy metal contamination[15,16,25]. The contamination in an aquatic community is of major concern because of its toxicity, abundance and persistence in the environment. This may contaminate the aquatic ecosystem or public health[4,22]. Thus the analysis of water quality is important to preserve the environmental system.

The application of basic and multivariate statistical methods including Cluster analysis (CA), Principal Component Analysis (PCA), Factor Analysis (FA) and Water Quality Index (WQI) for the investigation of water quality data are widely found in literature[2,3,8,24,26]. Government has responded to the water findings by implementing required appropriate action plans at diverse locations[6]. Hence it is important to provide the detailed composition of water parameters to help the local environmental policymakers.

Study area

Jaitapur is a small village situated in the Rajapur Tehsil of Ratnagiri District, Maharashtra. It lies on the Arabian Sea coast. Nuclear Power Corporation of India Limited (NPCIL) proposed a Nuclear Power Plant with a 9900 MW capacity near Jaitapur. This project is located at 16.55° N; 73.35° E, a part of Konkan in the Western Ghats of Maharashtra. The issue was highlighted by different non-governmental organizations because of the adverse effects of radiation and different types of pollution. Also, many other industries like thermal power, mining of aluminium etc. are being constructed in this Konkan region. This Konkan region is famous for mango production and export especially

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by NAAC(2021)
With CGPA 3.52

Ref. No. SU/PG-BUTR/Ph.D./O.D./379 /12923 Date : 20 OCT 2022

To,
Shri. Pande Ajinkya Krushna,
Department of Chemistry,
Shivaji University, Kolhapur.

Sub: Confirmation of admission to Ph.D. Degree Course.

Sir / Madam,

I am directed to inform you that you are hereby admitted to Ph.D. degree programme in **Chemistry** under the **Faculty of Science & Technology** w.e.f. **1/1/2022** under the guidance of **Dr. S. H. Burungale (Guide) & Dr. B. M. Sargar (Co-Guide)** on following conditions.

1. You will have to remit the yearly fee as mentioned below from the date of admission.
2. You will be imposed with the fine as per university rules, in case of your failure to remit prescribed fee in month of January, every year...

Sr. No.	Particulars	Regular Students & DRF	Form JRF/UGC Teacher Fellow Full Time Teacher at Jr./Sr.College., Laboratory, Private & Govt.Organisation Employed Persons
i)	Tuition Fee	Rs. 7405	Rs. 7405
ii)	Library Fee	Rs. 976	Rs. 1948
iii)	Internet fees	Rs. 1948	Rs. 1948
iv)	Lab Fees (Sci & Engg.)	RS. 2926	Rs. 5845
v)	Lab. Dev. Fees	Rs. 1948	Rs. 1948
vi)	Medical Charges	Rs. 100	Rs. 100
vii)	Student Development Kalyan Nidhi	Rs. 100	Rs. 100
viii)	Accident/Medical Help Fund Scheme	Rs. 20	Rs. 20
ix)	Youth Festival	Rs. 50	Rs. 50
	Total	**Rs. 15473/-**	**Rs.19364/-**

Successful completion of M. Phil course / M.Phil. Theory course work / pre Ph.D. theory course work shall be pre-requisite for the submission of thesis as per R.R.D. 14. If you fail to pay the above fee within one month from the date of receipt of this letter, your admission will be automatically cancelled.

Yours faithfully,

Dy. Registrar

Copy to:

1. The Head, Department of Chemistry, Shivaji University, Kolhapur.
2. Dr. S. H. Burungale (Guide), Department of Chemistry, Yashwantrao Chavan Science College, Karad
3. Dr. B. M. Sargar (Co-Guide), Department of Chemistry, Jaysingpur College, Jaysingpur
4. The Director, Barr. Balasaheb Khardekar Knowledge Resource Center, Shivaji University, Kolhapur.

Ps: The Approved title of your proposed research work is,

"BIO INSPIRED GREEN SYNTHESIS OF MAGNETIC NANOPARTICLES, CHARACTERIZATION AND CATALYTIC APPLICTIONS"

[Note: The student should verify the title of thesis and communicate this office (within 15 days) for [illegible] errors, if any]

Yashwantrao Chavan College of Science ★ KARAD ★