

# Surya Sen Mahavidyalaya

## Siliguri



ASSESSMENT PERIOD  
2018-2019 TO 2022-2023

**SUPPORTING ATTACHMENTS**

**CRITERION – 3**

**Key Indicator – 3.3 Research Publication and Awards**

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## 1. Task-Specific Properties and Prospects of Ionic Liquids in Cross-Coupling Reactions, *Bablee Mandal, Dept. of Chemistry*

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REVIEW



### Task-Specific Properties and Prospects of Ionic Liquids in Cross-Coupling Reactions

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#### Abstract

Ionic liquids (ILs) are considered as highly useful materials for potential diverse uses such as greener and more convenient alternatives to volatile organic solvents, reagents, additives, ligands and co-solvents. Thermal stability, negligible vapor pressure and high polarity with ionic environments have possibly conferred some unique physico-chemical properties and a wider electrochemical window on ILs. More importantly, these properties are tuneable, depending on variations in alkyl chains and counter-anions. On the other hand, various transition-metal-catalyzed cross-coupling reactions constitute an important backbone of contemporary organic synthesis. A vast number of C–C and C-heteroatom cross-coupling reactions are reported in the presence of ILs, often showing better performance. The influence of IL on the action of a given catalyst or on the course of a reaction can be relatively complex, and is not understood well enough to be able to draw succinct conclusions. However, there are a few reports in the literature that help understand the role of actual and active catalytic species stabilized in an IL environment. Stabilization, which can be either helpful or detrimental to catalysis depends on specific circumstances. This review article is aimed primarily at summarizing the various applications of ILs during the past decade, focusing as far as possible on the task-specific properties of ILs in transition-metal-catalyzed C–C and C-heteroatom cross-coupling reactions. Several successful achievements and noteworthy progress in this field of research leads to the sensible conclusion that future prospects in this field of research are not only bright but promise new horizons.

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## 2. Alternate Energy Sources for Sustainable Organic Synthesis

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### Sustainable Chemistry

## Alternate Energy Sources for Sustainable Organic Synthesis

Bablee Mandal<sup>\*[a]</sup>

Organic Chemistry plays an important role in energy, information, materials, population, health, environment and implementation of defence plan. Organic chemists therefore, have the greatest responsibility to devise methods of carrying out organic syntheses, which will reduce or even eliminate the by-products and solve the problem of environmental pollution from the source. One of the methods to achieve this is using non-conventional energy sources, such as microwave, ultrasound, and photochemical chemistry, in conjugation with non-toxic solvents, which dramatically reduces energy waste and

reaction time. Experiments synergising these alternate energy sources like microwave sonication, photosonication or microwave photochemistry, have gained high popularity as cost-effective green strategies. Pooling the advantages of alternate energy sources with biocatalysis is another novel avenue of sustainable synthesis. Organic electrosynthesis has also emerged as an environmentally benign technique for the construction of C-C and C-hetero bonds. Highlights of significant developments in these areas define the scope of the present discussion.

### 1. Introduction

The primary goal of synthetic chemists today is to devise sustainable methods for carrying out chemical syntheses. A synthetic reaction has many components which need to be addressed to make a reaction "green".<sup>[1]</sup> One of the important components is the energy source required to drive a reaction to completion. Though a "room temperature" reaction is considered to be an idle "green" reaction, but there are many reactions which are reluctant to advance without the application of external energy, i.e. high-temperature reactions. In these cases conventional heating possesses many problems such as long reaction time leading to waste of energy and often unnecessary by-products. In such cases, the reactions can be made benign by using alternative energy sources like microwave heating, ultrasonic sound and ultraviolet/visible light. Novel chemical processes for the syntheses of pharmaceuticals, fine chemicals, polymers etc. have been devised which use alternative energy inputs in combination with nano- or bio-catalysis to shorten the reaction time and eliminate or minimize the generation of side products thus contributing to sustainable chemistry.

The present paper comprises of discussions on the eco-friendly aspect of these non-conventional energy sources focusing on their advantages over conventional heating. Apart from shorter reaction time and by-product elimination, improved yields, enhanced selectivity and homogeneous heating are the major advantages offered by the non-conventional energy sources. In conventional heating, the heat energy is transferred to the reaction media from the heating source (via oil bath) through the reaction vessel resulting in inhomogeneous heating.

These problems are suitably dealt using alternative energy sources capable of providing even heating throughout the reaction media which is essential for nano-material as well as enzymatic syntheses.

Chemical activation by combining two different types of unconventional energy sources such as microwave-ultrasound<sup>[2,3]</sup> or microwave-UV-Visible radiation<sup>[4]</sup> is the latest green-hybrid strategy which promise to create a new discipline of chemistry giving an innovative dimension to sustainable synthesis. The deployment of these alternate energy sources has been discussed herein with a few essential and prominent applications to highlight their advantages. In addition, the principle of operation in each case has also been touched upon to create a better insight into the mechanism involved in such heating which gives them the edge over conventional heating.

### 2. Discussions

#### 2.1. Working Principles

The utility of microwaves in conducting chemical reactions is based on the ability of certain materials to absorb and transform electromagnetic energy into heat.<sup>[5]</sup> If the material is a conducting one, the microwaves are mostly reflected from the surface. If it is an insulator, the microwaves penetrate the surface without any absorption, loss or heat generation. If, on the other hand, the material is dielectric, the dipoles (permanent or induced) undergo reorientation during passage of microwaves, leading to absorption of microwaves which causes heat generation due to dielectric heating.

Microwaves being electromagnetic have two components – electric and magnetic field components. The electric field component is responsible for the dielectric heating. Moreover, as it oscillates very quickly, strong agitation due to cyclic reorientation of molecules can lead to intense heating in a very small time (sometimes 10 °C / sec). Fortunately a large number of organic compounds are available, which are polarisable and

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## 3. Women of Darjeeling Hills moving towards Self Employment Generation

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### Women of Darjeeling Hills moving towards Self Employment Generation

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#### ARTICLE DETAILS

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Economic, Social, Cultural, Enterprise, Home Stay, Sustainable.

#### ABSTRACT

The age of old farming system is no longer a sustainable profession in Darjeeling hills. Many women of Darjeeling used to leave their hometown to find work in other cities and foreign lands. With booming tourism business and increase in literacy rates today's educated women are choosing to return home to share their knowledge and experience to work towards development of the community to provide a sustainable livelihood solutions for their family. Homestay business being one of the fastest growing self-employment businesses. Darjeeling is known as "Queen of Hills" worldwide attracts every year a large number of tourists i.e international, national and local due to its beautiful mountain scenery and world-renowned tea gardens. During peak tourist seasons the number of hotels and guest houses becomes insufficient to accommodate the tourists. To overcome this crisis recently a popular trend called Home Stay Tourism has emerged in Darjeeling hills. Local people give their part of the premises in cash where tourists can explore the cultural heritages, lifestyles, and traditions of hill communities during their stay. The essence of such Home Stays is due to the homely atmosphere experienced by the tourists. The outcome of homestays has provided numerous benefits for unemployed women like financial stability, employment generation, social and cultural upliftments. The paper will focus on the three-dimensional views of the economic, social and cultural impact of Home Stay enterprise on unemployed women of Darjeeling Hills.

#### 1. Introduction

On 15<sup>th</sup> June 2016, the Government of West Bengal announced to promote Home-stay through organic farming. It is a place or area of the house where the owner offers to the tourist in exchange of money. This is an experience which is completely different from a hotel. Home-stay offers both fooding and lodging making the tourists as part of the family which is a huge drawback in hotel. This business has become very famous among the tourist and the same time as source of income for the unemployed people especially women of Darjeeling Hills. Home-stay is now-a-days the most booming business in the Darjeeling Hills. With huge success the government of West Bengal again revised the West Bengal Homestay Tourism policy on 2019 (26.12.2019) making it more convenient by involving more people so that employment generation can be created among unemployed people.

#### 2. Essential Necessities & Need for Home-stay:

- ✓ **Site:** The position of home-stay must be located in the area with natural scenery and easy accessibility of transportation. The area must be pollution free.
- ✓ **Safety & security:** The safety and security measures must be taken with utmost importance as the tourists are new to the place. For emergency tagging with good hospitals, police station etc are must for safety and security purpose.
- ✓ **Hospitality:** The guest are welcomed with warm heart and compassion and treated as god. They are treated as their family members.
- ✓ **Minimum Charge:** As compared to hotel charges, home-stay charge is relatively low with homely atmosphere and comforts.

- ✓ **Growth of Women entrepreneurs:** It provides new opportunities of job for unemployed women by using their local resources.
- ✓ **Revenue generation:** With increasing number of tourists revenue are generated for these home-stay owners leading to financial stability.
- ✓ **Capacity building:** Capacity building process is very much required for efficient functioning of home-stay operations.
- ✓ **Community involvement:** The success or goal of home-stay will be achieved if community as a large is involved. The owners of home-stay gets power and ability to grow from sound community support.

#### 3. Objectives of the study:

- i) To study the economic impact on financial stability among unemployed women.
- ii) To find out the social upliftments among unemployed women.
- iii) To find out cultural impact to the visitors.

#### 4. Methodology:

This article is based on both primary and secondary information. 100 women homestay owners were randomly selected for interview and questionnaires were supplied. These women owners are from Darjeeling town areas since maximum homestays are located here. The secondary data was obtained from journals, articles, government records, and websites.

#### 5. Literature Review:

Chaiyatorn, et al., (2010) stated that Home-stay business can guarantee economic, social, and cultural boon for local communities with all-round sustainable development.

Website Link: <https://old.rjournals.com/past-issue/women-of-darjeeling-hills-moving-towards-self-employment-generation/>



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## 4. Some fixed point results in fuzzy cone normed linear space

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ORIGINAL RESEARCH

Open Access

## Some fixed point results in fuzzy cone normed linear space



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### Abstract

In this paper, the well known fixed point theorems of Banach, Kannan, and Chatterjee are extended to the fuzzy cone normed linear space.

**Keywords:** Fuzzy cone norm, Strongly minihedral cone,  $\alpha$ -convergent,  $\alpha$ -Cauchy

**Mathematics subject classification:** 46S40, 03E72, 32C25

### Introduction

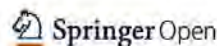
The concept of fuzzy norm was first introduced by Katsaras [1] in the year 1984. After that, in 1992, Felbin [2] defined a fuzzy norm on a linear space with an associated metric of the Kaleva and Seikkala type [3]. Further development in the notion of fuzzy norm took place in 1994, when Cheng and Moderson [4] gave the definition of fuzzy norm in another approach having an associated metric of the Kramosil and Michalek type [5]. Thereafter, following the definition of fuzzy norm by Cheng and Moderson [4], Bag and Samanta [6] introduced the concept of fuzzy norm in a different way.

On the other hand, several authors generalized the concept of metric space in many ways. One of them is the notion of cone metric space introduced by Long-Guang et al. [7] in the year 2007. In the year 2017, Tamang and Bag [8] extended the concept of fuzzy norm to fuzzy cone norm with replacement of  $\mathbb{R}$  by a real Banach space. In 1922, Banach [9] proved fixed point result on contractive type mappings. So far, many authors have obtained interesting extensions and generalization of the Banach contraction principle. In 1968, Kannan [10] and, in 1972, Chatterjee [11] studied contractive mappings which gives unique fixed point on complete metric space. As the fuzzy mathematics along with the classical ones are constantly developing, the above fixed point results in fuzzy cone normed linear space setting can also play an important role. Our aim in this paper is to establish Banach, Kannan, and Chatterjee type fixed point theorems in fuzzy cone normed linear space setting.

### Preliminaries

In this section, some essential concepts for study are stated. Throughout the paper we use symbol  $\wedge$  to denote the infimum.

**Definition 1** [7] *Let  $E$  be a real Banach space and  $P$  be a subset of  $E$ .  $P$  is called a cone if and only if:*



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## জলপুত্র উপন্যাস : প্রসঙ্গ ধীবর সমাজে লোকবিশ্বাস ও লোকসংস্কৃতি

রঞ্জিত কুমার বর্মণ

হরিশংকর জলদাসের 'জলপুত্র' উপন্যাসটির প্রকাশ অতিসাম্প্রতিক কালে। প্রথম প্রকাশ ২০০৮ সালের ফেব্রুয়ারি মাসে।<sup>১</sup> নদীনির্ভর জেলেজীবন কেন্দ্রিক বিখ্যাত উপন্যাসের সংখ্যা বাংলা সাহিত্যে কম নয়। উপন্যাসিক হরিশংকর জলদাসের 'জলপুত্র' উপন্যাসটি জেলেদের জীবন নিয়ে লেখা কিন্তু বিষয়বস্তু সমুদ্রনির্ভর জেলেজীবন। বাংলাসাহিত্যে এই প্রথম একটি উপন্যাস যেখানে সমুদ্র হয়ে উঠেছে জেলেদের জীবন-জীবিকা, সুখ-দুঃখ, হাসি-কান্নার নিয়ামক শক্তি। লেখকের কথায় "উত্তর পতেঙ্গা হতে মিরসরাই পর্যন্ত বঙ্গোপসাগরের কূলে কূলে অনেক জেলেপল্লী। উত্তর পতেঙ্গা, হালিশহর, কাটুলি, খেজুরতলি, ভাটিয়ারি, কুমিরা, সীতাকুণ্ড, মিরসরাই ইত্যাদি গ্রামের জেলেপাড়গুলো সমুদ্রের কোল ঘেঁষেই গড়ে উঠেছে। এই সমস্ত জেলেপল্লীর জেলেদের জীবন ও জীবিকা সাগরের কাছে বাঁধা। সাগরের শস্যে এই জলপুত্রদের জীবন চলে। তাদের বাঁচা-মরা সাগরের উপর নির্ভরশীল।"<sup>২</sup> সাগরের কূলে গড়ে ওঠা জেলেপল্লীতে তাদের জীবন-জীবিকার অনুকূলে গড়ে ওঠে নিজস্ব জীবনশৈলী, আচার-ব্যবহার, সামাজিক রীতি-নীতি, উৎসব-অনুষ্ঠান, ধর্ম-কর্ম, শিক্ষাদীক্ষা, আমোদ-প্রমোদ পদ্ধতি। জীবনযাপনের প্রয়োজনীয় উপকরণ, খাদ্যদ্রব্য, আসবাবপত্র, যানবাহন তারা তৈরি করে নিজেদের মতো করে। তারা তাদের মত করেই গড়ে তোলে নিজস্ব সংস্কৃতির জগৎ। 'জলপুত্র' উপন্যাসে জলপুত্রদের অপ্রাপ্তির বেদনা, চরম আর্থিক অনটন, শোষণ-বঞ্চনা, অশিক্ষার অন্ধকার ও অধিকার আদায়ের চিত্র নিপুণ ভাবে বর্ণিত হয়েছে এবং প্রকাশ পেয়েছে জলপুত্রদের সাংস্কৃতিক পরিমণ্ডল। লেখক নিজে জেলেসম্প্রদায়ের মানুষ। জলপুত্র উপন্যাসে জেলেদের প্রাত্যহিক জীবনবোধের বাস্তব অভিজ্ঞতার কথা নিপুণভাবে শিল্পসার্থক রূপ পেয়েছে। জলপুত্র উপন্যাস লেখার আগে ২০০৭ সালে তিনি তাঁর 'নদীভিত্তিক বাংলা উপন্যাস ও কৈবর্তজনজীবন' শীর্ষক গবেষণার জন্য চট্টগ্রাম বিশ্ববিদ্যালয় থেকে পিএইচ.ডি ডিগ্রি লাভ করেন। তিনি সচেতন ভাবে নদীকেন্দ্রিক জেলেজীবন নিয়ে আর উপন্যাস না লিখে নতুন আঙ্গিকে রচনা করেছেন জলপুত্র উপন্যাস। লেখক হরিশংকর জলদাস 'জলপুত্র' উপন্যাসে সমুদ্রনির্ভর জেলেদের জীবন-জীবিকা, তাদের ধর্মীয় বিশ্বাস, লোকচার ও লোকসংস্কৃতির এক অজানা আলোচনা নির্মাণ করেছেন। জলপুত্রদের লোকবিশ্বাস ও লোকসংস্কৃতি ছড়িয়ে আছে নানা ধর্মীয় ও সামাজিক অনুষ্ঠান, প্রাত্যহিক জীবনযাত্রায়, খাদ্যাভ্যাস প্রকৃতিতে।

### চৈত্রসংক্রান্তি ও পহেলা বৈশাখ

জেলেরা চৈত্রসংক্রান্তি ও পহেলা বৈশাখ এই দুটি দিনকে তাদের মতো করে বিশেষভাবে উদযাপন করে বা পালন করে। জলপুত্রদের কাছে গঙ্গাপূজা, মনসাপূজা ও চৈত্রসংক্রান্তি সমান গুরুত্ব পোষে থাকে। যদিও আজকের দিনে জেলেজীবনে চৈত্রসংক্রান্তি আসে।



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