



**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS),  
Sivakasi**

(Affiliated to Madurai Kamaraj University, Reaccredited with "A" Grade by NAAC,  
College with Potential for Excellence by UGC & Mentor Institution under UGC PARAMARSH)

**NAAC SSR Cycle IV (2015-2020)**

**3.7. COLLABORATION**

**3.7.1. COLLABORATIVE ACTIVITIES**

**RESEARCH**

**2019-2020**



**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS),  
SIVAKASI – 626 123.**

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC,  
College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

**Title of the collaborative activity : International Conference on Women in the  
Contemporary Society: Chances and Challenges**

<p>The Standard Fireworks Rajaratnam College for Women (Autonomous) Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, and College with Potential for Excellence by UGC. Sivakasi - 626123</p>		<p><b>PATRONS</b> Tmt. Thilagavathy Ravindran - President Tmt. Aruna Ashok - Secretary</p>		<p>The Standard Fireworks Rajaratnam College for Women (Autonomous) Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, and College with Potential for Excellence by UGC. Sivakasi - 626123</p>	
<p>Indian Council of Social Science Research (ICSSR) sponsored One-Day International Conference (Humanities and Social Sciences) on "Women in Contemporary Society: Chances and Challenges"</p>		<p><b>ORGANISING COMMITTEE</b> <b>Chairperson</b> Dr. (Mrs.) T. Palancesswari - Principal</p>		<p>Indian Council of Social Science Research (ICSSR) sponsored One-Day International Conference (Humanities and Social Sciences) on "Women in Contemporary Society: Chances and Challenges"</p>	
<p><b>REGISTRATION FORM</b></p>		<p><b>Conference Directors</b> Dr. (Mrs.) P. Jeyappriya - Associate Professor of English, Mother Teresa Women's University, Kodalkanal. Mrs. K. Muthamil Selvi - Associate Professor &amp; Head</p>		<p><b>50</b> Organised by <b>THE DEPARTMENT OF ENGLISH</b></p>	
<p>Name : _____ Designation : _____ Institution : _____ Address for Communication : _____ Phone/Mobile No. : _____ E-mail ID : _____ Presenting a Paper : YES / NO Title of the Paper : _____</p>		<p><b>Convenor</b> Dr. (Mrs.) J. Sobhana Devi - Assistant Professor</p>		<p><b>Co-ordinator</b> Dr. (Mrs.) B. Siva Priya - Assistant Professor</p>	
<p>DD No. : _____ Bank : _____ Date : _____</p>		<p><b>Committee Members</b> Mrs. M. Sathya - Assistant Professor Dr. (Mrs.) M. Shanthi - Assistant Professor Dr. (Mrs.) P. Pracanna Devi - Assistant Professor Dr. (Mrs.) P. Karthika Devi - Assistant Professor Mrs. V. Lalithambigai - Assistant Professor Dr. (Mrs.) A. Padma Priya - Assistant Professor Dr. (Mrs.) V. S. Shukila - Assistant Professor Dr. (Mrs.) S. Sohami - Assistant Professor Dr. (Mrs.) V. C. Priyadharshini - Assistant Professor Dr. (Mrs.) K. Ramajeyalakshmi - Assistant Professor Mrs. N. Hanumathi - Assistant Professor Dr. (Mrs.) G. Umadevi - Assistant Professor Mrs. J. Sandhini - Assistant Professor Mrs. V. Kanti Selvi - Assistant Professor Ms. D. Ponnambal - Assistant Professor Ms. S. Vandhana - Assistant Professor Mrs. S. Banurekha - Assistant Professor</p>		<p>Jointly organized by <b>The Department of English and Foreign Languages Mother Teresa Women's University, Kodalkanal</b> January 11, 2019</p>	
<p>(Photocopies of Registration Form are also accepted)</p>					

#### ABOUT THE COLLEGE:

The genesis of The Standard Fireworks Rajaratnam College for Women stands on the strong base of empowering women in the field of education in the semi-urban town of Sivakasi. Established in 1968 in memory of the philanthropist and fireworks industrialist Thiru N.R.K.K. Rajaratnam, through its fifty years of innovative service, the institution has stitched a place for itself in the fabric of this cracker city's rich history and heritage. The intellectually challenging environment constantly steers young women towards intellectual, social and financial mobility. Being affiliated to Madurai Kamaraj University, Madurai, bestowed with Autonomy in 2005, re-accredited in 2008 and 2012 with 'A' Grade status by NAAC and recognised as 'College with Potential for Excellence' in 2011 and granted exemption since 2012 by UGC, the college is a much sought after women's institution in the neighbouring region.

#### ABOUT THE DEPARTMENT:

The Department of English with the luminous history of 50 years is an icon of the golden legacy of SFRC. This milestone has been achieved by the collective contribution of each member of the department who with steady determination realises the noble objective of shaping young women into all-round personalities. The Department offers two streams of UG, (Regular and Self-Financed), PG and M.Phil programmes and Business English Certification Programme and a Certificate Course in Vocational English which foster creativity and enhance employability potentials through effective communication skills in English. The Department pursues the herculean task of grooming the students with updated curriculum to match the demands of the twenty first century and nurturing them with moral values and principles to confront the challenges in the society.

#### ABOUT THE CONFERENCE:

The main focus of the One-Day International Conference on "Women in Contemporary Society: Chances and Challenges" is to make scholars and students analyse women's lives and their experiences in a multi-disciplinary mode through highlighting upcoming trends in fields like women studies, women's writing, art, media, science, etc.. A woman who holds a very powerful place and has a chance will face lots of challenges and it's high time issues like these are brought under discussion. Women, no doubt, have acquired constitutional rights of equality with men, but the change in social attitudes towards women is yet to be achieved. In such a scenario, her journey from 'margin' to the 'centre' becomes even more challenged.

The conference aims to discuss how literature as a powerful medium of reform helps in bringing out the chances and challenges that women folk face in their everyday life today. In collaboration with the Department of English and Foreign Languages, Mother Teresa Women's University, Kodaikanal, the Department of English of SFRC feels privileged to host the One-Day International Conference on "Women in Contemporary Society: Chances and Challenges", on 11th January, 2019.

#### SUB-THEMES

##### Humanities and Social Sciences

- Women represented in Literature
- Gender Issues
- Role and Representation of Women in Politics
- Representation of Historical and Mythical Women
- Women and Legal Studies
- Women and Sustainable Development
- Women and Social Activism
- Women, Migration and Statelessness
- Challenges before Women Entrepreneurs

(Apart from the above mentioned sub themes, papers will be accepted on topics relevant to the main theme. Faculty and Scholars from Language Departments may send their papers in their respective languages.)

#### CALL FOR PAPERS

- Full Paper not exceeding 5 pages along with an abstract in about 200 words and Key Words to be sent in the form of Soft copy to [sfrcengconference69@gmail.com](mailto:sfrcengconference69@gmail.com) on or before 03.10.2018
- The paper should contain the Title, Author's name, Designation, Official Address, E-mail ID and Mobile Number
- Format : Times New Roman - Font size 12 - 1.5 Spacing - Paper Size A4
- Parenthetical Documentation and Works Cited as instructed in the MLA Handbook to be followed
- LCD facility is available for Power Point Presentation
- Prizes for Best papers and Certificates for Participation will be given
- Selected Papers will be published in a UGC Approved Journal with ISSN on the day of the Conference
- Editorial Board's decision is final

#### KEY SPEAKERS:

\*Dr.J.S.Rohan Savarimuthu, A.A., M.A., Ph.D. (Philosophy/Religion),  
M.Sc. (Sociology & Psychology), Ph.D. (L.T.),  
M.Ed., M.A., Ph.D.,  
Senior Lecturer in English, Department of Languages and Communication  
Studies, Eastern University (Trikonastale Campus), Sri Lanka.

\*Thiru.S. Veerakannan, Tamil Writer,  
Sahitya Akademi Award Recipient for Kannada,  
General Secretary of the Tamil Nadu Progressive Writers and Artists  
Association.

#### REGISTRATION FEE

Participation	- Rs.300
Paper Presentation	- Rs.700
Publication in Journal with ISSN	- Rs.1200

#### DATES TO REMEMBER

Submission of Paper with Abstract	: 05.10.2018
Date of Confirmation	: 17.10.2018
Last Date for Payment of Fee	: 26.10.2018

#### NOTE

- \*DD should be drawn in favour of "The Principal, SFRC College for Women, Sivakasi" payable at Sivakasi.
- \*Co-author has to pay the Registration fee
- \*Contributors of published articles are entitled to a copy of the Journal.
- \*No TA/DA will be provided
- \*Accommodation to be arranged at one's own expense

#### FOR FURTHER DETAILS CONTACT:

##### Convenor

Dr. (Mrs.) J. Sobhana Devi - Assistant Professor - 9843236514

##### Co-ordinator

Dr. (Mrs.) H. Siva Priya - Assistant Professor - 9446907393

#### All correspondence should be addressed to

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Mrs. A.Aruna, B.Sc.,  
Secretary



Dr.(Mrs.)T.Palaneeswari, M.Com.,M.Phil.,Ph.D.  
Principal

Ref. No: \_\_\_\_\_

21.08.2018

To

The Incharge,  
IC Division Indian Council of Social Science Research (ICSSR)  
JNU Institutional Area  
Aruna Asaf Ali Marg,  
New Delhi - 110067

Sir / Madam,

The Standard Fireworks Rajaratnam College For Women, Sivakasi, forwards application of Dr. J. Sobhana Devi, for the financial assistance for organizing seminar / conference on the theme **Women in Contemporary Society: Chances and Challenges**.

With an undertaking that this organization agrees to administer and manage the ICSSR Seminar Grant and provide basic infrastructural facilities for the above-mentioned seminar. The institution shall be responsible for submitting the audited statement of accounts and utilization certificate for the grant received by it, for this purpose.

*Sobhana Devi, J.*  
Convener

*T. Palaneeswari*  
Signature of the Principal  
Name: Dr.T.Palaneeswari  
Designation: Principal  
**Dr. T. Palaneeswari**  
**PRINCIPAL**  
**The Standard Fireworks**  
**Rajaratnam College**  
**for Women,**  
**SIVAKASI.**

\* Enrichment with knowledge \* Empowerment of women \*

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From

Dr.J.Sobhana Devi  
Assistant Professor of English  
S.F.R.College for Women  
Sivakasi

20-12-2019

To

Dr.S.Jeyanthi  
Assistant Professor of English  
Sri S Ramasamy Naidu Memorial College  
Sattur

Dear Madam,

Greetings! We are glad to invite you to chair a session in the One-Day International Conference on **Women in Contemporary Society: Chances and Challenges** to be held on 11.01.2019 at our campus. Your presence is our pleasure.

Thank you,

Yours sincerely,

  
Convener 20/12/19

  
Conference Director &  
Head of the Department, English  
Mrs. K. NUTHAMIL SELVI M.A. M.Phil. B.Ed  
Associate Professor and Head,  
Department of English,  
S.F.R. College for Women (Autonomous),  
SIVAKASI - 626 123.



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**Title of the collaborative activity : Paper Publication**

**Synthesis and Characterization of a NLO crystal - bis (thiourea) zinc sulphate doped with L-malic acid**

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1. \* Department of physics, The Standard Fireworks Rajaratnam College for women, Sivakasi-626 123, India; e-mail : sivasankaria-physics@stfcollege.edu.in.

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**Keywords :** A1: SHG; B1: force constant;  
C1: Hardness; D1: NLO.

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**Abstract**

*The nonlinear optical (NLO) material L-malic acid bis(thiourea) zinc sulphate (LMBTZS) was grown by slow evaporation method. The effect of L-malic acid doping on the morphology of the LMBTZS single crystal has been studied. The unit cell parameters were determined by single crystal XRD. The fractional groups and force constant of LMBTZS was identified by FTIR analysis. The photoluminescence spectrum of LMBTZS shows the strong emission in ultraviolet region. The thermal behaviours were identified by TG/DTA analyses. Dielectric studies of the grown crystal was carried out. The SHG efficiency was confirmed by powder technique of Kurtz and Perry. LMBTZS is found to be an excellent NLO and piezo-electric material.*

**1. INTRODUCTION**

The semiorganic crystals [1–5] are used as new frequency generators, due to the large non-linearity, high resistance to laser induced damage [6], low angular sensitivity and good mechanical hardness [7–9]. Among the semi organic non-linear optical materials, metal complexes of thiourea are applicable for high power frequency conversion [10]. Growth of bulk single crystals of these materials has been a subject of perennial concern to enable them to be useful for device applications. Some examples of semiorganic NLO materials are zinc tris (thiourea) sulphate (ZTS) [11–25], bis (thiourea) cadmium chloride (BTCC), zinc thiourea chloride (ZTC) and copper thiourea chloride (CTC). In the present work, the physical, structural, thermal, dielectric and piezo-electric, NLO properties of LMBTZS crystal was studied.

**2. EXPERIMENTAL TECHNIQUES**

**2.1 Synthesis of NLO material**

The thiourea and zinc sulphate was taken in 2:1 ratio.



The thiourea and zinc sulphate was dissolved in distilled water and kept separately. The zinc sulphate solution was transferred into the thiourea solution. Immediately ZTS salt was precipitated in the solution then the product was separated and dried.

**2.2 Growth of Single Crystal**

The synthesized salt of ZTS was thoroughly dissolved in distilled water. Simultaneously 0.02 mol % of L-malic acid doped ZTS (LMBTZS) solution was prepared and allowed for crystallization. The grown crystals of size  $0.8 \times 1.2 \times 0.5 \text{ mm}^3$  were harvested in a period of 20 days (Fig. 1).



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**Title of the collaborative activity : Paper Publication**

Journal Pre-proofs

Eco-friendly Biopolymer kappa Carrageenan with  $\text{NH}_4\text{Br}$  Application in Energy Saving Battery

M. Nithya, M. Alagar, B. Sundaresan

PII: S0167-577X(19)31927-5  
DOI: <https://doi.org/10.1016/j.matlet.2019.127295>  
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**Title of the collaborative activity : Paper Publication**

J. Int. Sci. Technol. 2020, 8(1), 1-5 Article

Journal of Integrated  
**SCIENCE & TECHNOLOGY**

**Development of Red Seaweed extracted film for energy saving Batteries**

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<sup>2</sup>Department of Physics, The S.F.R. College for Women, Sivakasi, TamilNadu, India. <sup>3</sup>Post graduate Department of Physics,  
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Received on: 05-Jan-2020, Accepted and Published on: 01-May-2020

**ABSTRACT**



Red seaweed extract, kappa-carrageenan (KC) is used to fabricate a flexible battery with an ammonium salt. A combination of the film was successfully synthesized by the Solution Casting technique. The prepared eco-friendly film is subjected to ionic conductivity study, transference number studies, and then the high response film is used to fabricate battery. The highest ionic conductivity value for 1gm kappa-carrageenan with 200 mg NH<sub>4</sub>Cl is  $2.99 \times 10^{-5}$  S/cm. The highest conducting seaweed extract film transference numbers are very close to unity. By using this biopolymer film, the fabricated biopolymer battery generates the maximum of open-circuit voltage is 1.74V. By using this proton ion battery we can replace liquid ion battery and solid ion battery. Also, the films are easily biodegradable and not at all generate e-waste.

**Keywords:** Red seaweed extract, Kappa-carrageenan, Flexible film, Conductivity, Battery fabrication

**INTRODUCTION**

In a green economy, the demands for biopower enhance the technological interest in the field of solid biopolymer electrolyte (BPE). In recent years, this highly specialized field encompasses to play a vital role in designing energy-based devices, replacing liquid electrolyte in fuel cells, electrochemical sensors, batteries, and electrochromic devices<sup>1-4</sup>. The Solid BPE provides good contact surface with electrodes, good shelf life, less problem with leakage or pressure distortion and also the BPE is easy to prepare and very affordable<sup>5,6,11</sup>. However, the synthetic polymer faces disadvantage and not being environmentally green. Hence, it is imperative to develop the biopolymer electrolytes by using natural polymers, which has gained more and more attention, owing to their abundant in nature, low cost, friendliness to the environment and potential as a substrate for some petrochemicals<sup>7,8</sup>. In this way, an ideal solid BPE in the polymer electrolyte system contributes to free pollution and it has directly brought forward green nations, which fosters the interest in research to address the environmental crisis. Several researchers are doing their research in the field of biopolymer using starch<sup>9-11</sup>, cellulose, chitosan, pectin, agar, and Kappa-carrageenan.

Kappa-carrageenan extracted from red seaweed alga to form complex arrangements. The use of this to form thin flexible film and is used to fabricate battery devices. Fabrication of thin-film battery is an emergent field in the year 2019 to 2020.<sup>15</sup>

Biopolymer films are mechanically behaving like a solid but the conductivity behavior is like a liquid state.<sup>16</sup> The conductivity of a material is the major property of electrical appliances. The conductivity of the material is different for different materials. Production of electricity in the material depends on the dissolved impurities in the material. Depending upon the suspended ions the electrical charge is transferred in the material. Based on conductivity and resistivity, the conducting material is segregated into two main categories. The first one is the highest conductivity

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Journal of Integrated Science and Technology

J. Int. Sci. Technol., 2020, 8(1), 1-5 **1**





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**Title of the collaborative activity : Paper Publication**

**Australian Journal of Electrical and Electronics Engineering**

ISSN: (Print) (Online) journal homepage: <https://www.tandfonline.com/fo/tele20>

**Investigation on synthesis of SnO<sub>2</sub> nano-particles using sol-gel process for energy storage application**

Sudha Periathai R. , Pon Vengatesh R. , Jeyakumaran N. & Prithivikumaran N.

To cite this article: Sudha Periathai R. , Pon Vengatesh R. , Jeyakumaran N. & Prithivikumaran N. (2020): Investigation on synthesis of SnO<sub>2</sub> nano-particles using sol-gel process for energy storage application, Australian Journal of Electrical and Electronics Engineering, DOI: 10.1080/1448837X.2020.1786294

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**Title of the collaborative activity : Paper Publication**

Polymer-Plastics Technology and Materials

ISSN: (Print) (Online) journal homepage: <https://www.tandfonline.com/loi/lpte21>

**Influence of nano SrTiO<sub>3</sub> and ultrasonic irradiation on the properties of polymer blend electrolytes**

Jayanthi S. & Sundaresan B.

To cite this article: Jayanthi S. & Sundaresan B. (2020): Influence of nano SrTiO<sub>3</sub> and ultrasonic irradiation on the properties of polymer blend electrolytes, Polymer-Plastics Technology and Materials, DOI: 10.1080/25740881.2020.1784220

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**Title of the collaborative activity : Paper Publication**

Journal of ELECTRONIC MATERIALS  
https://doi.org/10.1007/s11664-020-08445-8  
© 2020 The Minerals, Metals & Materials Society



## Structural, Electrical, and Electrochemical Characterization of $\text{Li}_{1.2}\text{Ni}_{0.6-x}\text{Mg}_x\text{Co}_{0.3}\text{O}_2$ Cathode Materials for Application in Lithium-Ion Batteries

S. ABARNA,<sup>1</sup> R. SUDHA PERIATHAI,<sup>2</sup> R. PON VENGATESH,<sup>1,3</sup>  
and N. PRITHIVIKUMARAN<sup>4</sup>

1.—Department of Physics, Ayya Nadar Janaki Ammal College, Sivakasi, India. 2.—Department of Physics, The Standard Fireworks Rajaratnam College For Women, Sivakasi, India. 3.—Department of Electrical and Electronics Engineering, AAA College of Engineering and Technology, Sivakasi, Tamil Nadu, India. 4.—Department of Physics, V.H.N. Senthikumar Nadar College, Virudhunagar, India. 5.—e-mail: ponvengatesh@gmail.com

Lithium-rich nickel-cobalt-magnesium-oxide cathode materials with varying concentrations of nickel and magnesium have been synthesized using a solid-state reaction (SSR) method. The structural properties of the as-synthesized cathode materials were analyzed by x-ray diffraction (XRD), confirming their  $\alpha\text{-NaFeO}_2$  layered structure in space group  $R\bar{3}m$ . Scanning electron microscopy (SEM) study revealed the cube-like hexagonal structure of the prepared materials. Electrochemical impedance spectroscopy (EIS) was carried out in the frequency range from 1 Hz to 7 MHz with a voltage amplitude of 10 mV. At ambient temperature, the direct-current (DC) conductivity was found to be the highest for the  $\text{Li}_{1.2}\text{Ni}_{0.6}\text{Co}_{0.3}\text{O}_2$  cathode material with a value of  $3.64 \times 10^{-8}$  S/cm. Various conducting mechanisms are proposed for the prepared cathode materials based on Jonscher's power law. The activation energy is seen to increase with increasing Mg concentration, which helps to produce a defect-less or ordered homogeneous structure. Furthermore, the value of the power-law exponent  $n$  is found to decrease with increasing Mg concentration. For the  $\text{Li}_{1.2}\text{Ni}_{0.3}\text{Mg}_{0.3}\text{Co}_{0.3}\text{O}_2$  sample, the  $n$  value decreases with increasing temperature and is found to be less than 1 at higher temperatures, indicating the orderliness of the system. Cyclic voltammetry (CV) measurements confirmed that Mg substitution delayed the oxidation and reduction processes, thus enhancing the operating voltage of the electrochemical cell.

**Key words:** Cathode material, layered structure, electrical conductivity, transport mechanism, cyclic voltammetry

### INTRODUCTION

In recent years, the need for portable power has increased due to the miniaturization of electronic appliances, where in some cases the battery system may account for as much as half the weight and volume of the powered device.<sup>1</sup> A battery is made up of one or more interconnected electrochemical cells.

The energy density and cost of such cells mainly depend on the cathode material used. Hence, a great volume of research on cathode materials has been carried out. Based on their structure, cathode materials for use in lithium batteries can be classified into layered type ( $\text{LiMO}_2$ ), spinel type ( $\text{LiM}_2\text{O}_4$ ), olivine type ( $\text{LiMPO}_4$ ), and tavorite type ( $\text{LiM}_2\text{SO}_4$ ).<sup>2</sup> Among the layered-type cathode materials, several materials such as  $\text{LiCoO}_2$  (LCO),  $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$  (LCA), and  $\text{LiNi}_{0.7}\text{Co}_{0.15}\text{Mn}_{0.15}\text{O}_2$  (NMC) are commercialized. The main drawback of layered-type materials is their structural instability

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