



# IPSL - Newsletter

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The News Letter of the Institute of Physics, Sri Lanka

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## INSTITUTE OF PHYSICS, SRI LANKA (IPSL)

Vidya Mandiraya, 120/10, Wijerama Mawatha, Colombo 7, Sri Lanka.

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## IPSL Highlights - 2019

### *OPA Membership*

Institute of Physics Sri Lanka became the 52<sup>nd</sup> member of the Organization of Professional Associations (OPA) from December 2019. Two members of IPSL can represent the General Forum and one among them represents the Executive Council of the OPA while all the members of the IPSL become members of the OPA. Professor K.P.S.C. Jayaratne is greatly acknowledged for the effort taken to obtain the membership of the OPA.

### *Foundation Course in Physics*

Inauguration ceremony and the commencement of the Foundation course in Physics took place on 12<sup>th</sup> October 2019 with the participation of council members. Five students registered out 25 applications received. When the course was advertised again in January 2020 after releasing the G.C.E (O/L) examination results, 12 students have been registered for the course and their academic work commenced from 15<sup>th</sup> February 2020.



Council members and the registered students of the Foundation course in Physics-2019

## 40<sup>th</sup> Annual General Meeting

Initially, Council decided to hold the 36<sup>th</sup> Technical Sessions and the 40<sup>th</sup> AGM of the IPSL on March 21, 2020 at the Seminar room of the Faculty of Natural Sciences at the Open University of Sri Lanka. Due to the Covid 19 pandemic, it was not possible to conduct those activities as scheduled since the country was shut down for several months. Even after the opening, gathering of people was restricted by the health authorities. Later it was decided to conduct the AGM and Technical sessions on 29<sup>th</sup> August 2020 under the conditions of the health ministry.

New office bearers and the members of the Council were unanimously elected for the year 2020/2021.

Prof. VPS Perera was elected as the President for the second time. He thanked all the council members for extending their fullest support in all the activities conducted by the Institute of Physics Sri Lanka in the past year. Finally, the president sought dedicated support from the newly elected council members to carryout the IPSL activities forward in 2020/2021.

## Papers Presented at the 36<sup>th</sup> Technical Sessions

Seventeen research papers were received and sixteen were accepted for oral presentations at the Technical Sessions, after reviewing each and every paper by two reviewers. The papers accepted for oral presentations and the programme of the Technical Sessions held on August 29, 2020 are given below. Sixteen papers were presented within three sessions.

### Session I (0830-1010 hrs) - Session Chairman: Professor SRD Kalingamudali

- 1. Characterization of Aluminium reflective thin films deposited by a modified thermal evaporator designed for coating telescope optics**  
*H.D.S. Amaradasa, A.G.P.D. Alahakoon<sup>2</sup>, K.G. Samarathna, S.S. Abeywickrama, G.D.K.Mahanama, K.P.S.C. Jayaratne, N.C. Wickramasinghe*
- 2. Exfoliated Graphite Based All Solid State Electrochemical Double Layer Capacitor**  
*D.S.K. Rajaguru, K.P. Vidanapathirana, K.S. Perera*
- 3. Estimation of Some Atmospheric Turbidity Parameters in Three Locations in Sri Lanka**  
*A.V.U.A.Wickramarathna, C.P. Abayaratne, B.M.S.G. Banneheka*
- 4. Junction and material properties of n-Cu<sub>2</sub>O/p-CuI based heterojunction fabricated by low-cost methods**  
*I.W.R. Nisansa, I.S. Jayalath, P.K.D.D.P. Pitigala*
- 5. Growing n-Cu<sub>2</sub>O thin films on transparent ITO substrate, to replace the opaque copper metal substrate, for photovoltaic applications**  
*I. S. Jayalath, I.W.R. Nisansa, P.K.D.D.P. Pitigala*

### Session II (1030-1230 hrs) - Session Chairman: Professor D D N B Daya

- 6. Investigation of Ion Transport in Banana Pith Electrolyte Sandwiched Between Mild Steel Electrodes**  
*C. N. Nupearachchiand, V. P. S. Perera*
- 7. Effects of interfacial distance and Electric field on Graphene-Silicene hybrid structures**  
*K.M. Abeywickrama, P.K.D.D.P.Pitigala, W.W.P De Silva*
- 8. Fabrication and characterization of electrochemical double-layer capacitors using a Sri Lankan Natural Rubber based polymer electrolyte**  
*H.G.N. Rajapaksha, K.S. Perera, K.P. Vidanapathirana*
- 9. Exploration of Optimum Concentration of L-Ascorbic Acid for Modification of TiO<sub>2</sub> Surface of Photovoltaic Cells with High Photovoltaic Efficiency**  
*G.C.Wickramasinghe, C.K. Edirisinghe, V.P.S. Perera and K.N.D. Bandara*
- 10. Bulk Hetero Junction Solar Cell Fabricated Using Plant Extracts**  
*U.G.M.D. Rajasekara, G.C. Wickramasinghe, G.M.L.P. Aponsu and V.P.S. Perera*
- 11. The Effect of Uniform and Non-uniform Electron Density Models for Determining Shock Speed of a Type II Solar Radio Burst**  
*D. P. S.Nilagarathne, J. Adassuriya, H. O. Wijewardane*

Session III (1320-1500 hrs) - Session Chairman: Professor KD Jayasuriya

12. **Development of Liquid Electrolyte and Their Applications in Electrochromic Devices**  
*H. M. B. I. Gunathilaka, V. A. Seneviratne, H. N. M. Sarangika*
13. **Effect of curing temperature on the compressive strength development of cement mortar composition containing Aluminium slag**  
*P.V. K.I.Wimalaweera, R. C. L. De Silva, A. A. M. T Adikari, K. A. Sanjeewa, D. D. N. B. Daya*
14. **Analyzing Train Vibrations to Observe Their Relationship with Communication**  
*P.G.A.C. Palpita, N.G.S.S.Gamage, C.M. Kalansuriya*
15. **Development of Vehicular Pollution Monitoring Equipment**  
*G H Asoka, D U J Sonnadara*
16. **Develop Prediction Models of Air Pollution Closed to Selected Busy Traffic Routes**  
*G H Asoka, D U J Sonnadara*

## New Council

The Council photograph was taken at the University of Colombo on 23<sup>rd</sup> November 2019 before the IPSL Awards Ceremony.



First Row (L-R): Mr. G.H. Asoka (Co-Editor), Dr. R.C.L. De Silva (Jt. Secretary), Prof. H.H. Sumathipala (Treasurer), Prof. P.A.A. Perera (Immediate Past President), Prof. V.P.S. Perera (President), Dr.(Ms.)H.O. Wijewardane (Co-Editor), Mr. D.L.N. Jayathilake (Assistant Treasurer), Mr. S.G. Punchihewa (Vice President), Dr. N.G.S. Shantha (Vice President)

Second Row (L-R): Dr. R.V.Coorey, Prof. K.P.S.C. Jayaratne, Dr. U.S.Rahubadda, Dr. G. Illeperuma, Mr. C. Kalansuriya, Prof. D.D.N.B. Daya, Prof. L.B.D.R.P. Wijesundera, Dr. P.K.D.P.P.Pitigala (Jt. Secretary)

## Prof. A. W. Mailvaganam Memorial Oration —2019

Professor A.W. Mailvaganam Memorial Oration 2019 titled “Development of the Lithium-Ion Battery” was delivered by Professor J.R.P. Jayakody, Professor in Physics, University of Kelaniya. Event was held at 5:30 pm on Saturday, November 23, 2019 at the New Physics Lecture Theatre (NPLT), Department of Physics, University of Colombo.



Professor A. W. Mailvaganam Memorial Oration - 2019

## Sri Lankan Olympiad Competitions

The 15<sup>th</sup> Sri Lankan Physics Olympiad Competition, the 13<sup>th</sup> Sri Lankan Astronomy and Astrophysics Olympiad Competition and the 9<sup>th</sup> Sri Lankan Junior Astronomy Olympiad Competition were held at the Universities of Colombo, Eastern, Jaffna, Kelaniya, Peradeniya, Ruhuna, Rajarata (Mihinthale), Vavuniya and Open University Centers in Kandy (Polgolla) and Batticaloa on September 7, 2019.

The 5<sup>th</sup> Sri Lankan Junior Science Olympiad Competition was held on the 06<sup>th</sup> of April 2019 at University of Colombo, University of Sri Jayewardenepura, University of Kelaniya, University of Jaffna, Vavuniya Campus, University of Ruhuna, Open University (Colombo, Batticaloa, Polgolla), Rajarata University, Wayamba University, Uva Wellassa University. Bank of Ceylon (BOC) generously sponsored the event by donating LKR one Million. National Science Foundation partially sponsored to participate in the International Olympiad Competitions.

### Physics Olympiad Competition

A total of 211 students registered for the 15<sup>th</sup> Sri Lankan Physics Olympiad Competition in 2019 and 08 students won gold medals, 26 students won silver medals while 18 students won bronze medals. Based on the results of this competition, seven students participated in 20<sup>th</sup> Asian Physics Olympiad competition held in Adelaide, Australia from 05<sup>th</sup> to 13<sup>th</sup> May 2019. Five among them were selected to participate in the 50<sup>th</sup> International Physics Olympiad Competition held in Tel Aviv, Israel from 7<sup>th</sup> - 15<sup>th</sup> July 2019. The team was led by Professor H.H. Sumathipala of University of Kelaniya and Dr. Ramal V. Coorey, Senior Lecturer of University of Colombo. Following two students received Honourable Mentions.

1. H Thevindu Janith Wijesekera of Royal College, Colombo-07
2. Sahan Manodya Karawita of Takshilla Central College, Horana

### Astronomy and Astrophysics Olympiad Competition

A total of 274 and 712 students participated for the 13<sup>th</sup> Sri Lankan Astronomy and Astrophysics Olympiad (SLAAO) competition, and the 9<sup>th</sup> Sri Lankan Junior Astronomy Olympiad (SLJAO) competition respectively. In the SLAAO-2019, students won 10 Gold, 15 Silver, 28 Bronze and 48 Merit awards. In the SLJAO-2019 students won 21 Gold, 41 Silver, 80 Bronze and 141 Merit awards.

Following team of five students, who excelled in the national competitions participated in the 24<sup>th</sup> International Astronomy Olympiad (IAO) which was held in Piatra Neamt, Romania from 19<sup>th</sup> to 27<sup>th</sup> October 2019.

Members represented the National Astronomy Olympiad Senior Beta Team

1. N D H Nethmal of Ananda College, Colombo-10.
2. K W S A Rathnapriya of Thakshila Central College, Horana

Members represented the National Astronomy Olympiad Junior Alpha Team

1. H.A.M.L.T.Wijethunga of Isipathana College, Colombo-05
2. R.K.M.D.T.Ranaweera of Anula Vidyalaya, Nugegoda
3. W.K.D.Udesha of Rajapaksha Central College, Weerakatiya

### Junior Science Olympiad

Seven hundred and seventy five students have registered for the Sri Lankan Junior Olympiad (SLJSO) competition in the year 2019. In the SLJSO-2019, 14 students won gold medals, 34 students won silver medals while 57 students won bronze medals. The following students participated in the 16<sup>th</sup> International Junior Science Olympiad-2019 that was held in Doha, Qatar during 2<sup>nd</sup> to 12<sup>th</sup> December 2019.

1. GKR B Ranatunga of Maliyadewa College, Kurunegala (Bronze Medal)
2. WMG Irukumarasiri of Sivali Central College, Rathnapura (Bronze Medal)
3. HTSD Fernando of Nalanda College, Colombo (Bronze Medal)
4. K K R Kanangara of Boswell College International, Kalutara (Bronze Medal)
5. HKKH Karunarathna of Thurstan College, Colombo (Bronze Medal)
6. A Apilash of Jaffna Hindu College, Jaffna

Sri Lankan students successfully competed with other international students and they were able to secure five Bronze Medals. The Sri Lankan team was trained by Prof. H.H. Sumathipala, National Coordinator of Sri Lankan Junior Science Olympiad and the Country Coordinator for International Junior Science Olympiad, Prof W.U. Chandrasekara, Department of Zoology & Environmental Management, University of Kelaniya and Prof. Kapila Senevirathne, Department of Chemistry, University of Kelaniya.

## Olympiad Highlights - 2019



Sri Lankan team represented at the 50<sup>th</sup> International Physics Olympiad Competition held in Tel Aviv, Israel



Sri Lanka team represented at 24<sup>th</sup> International Astronomy Olympiad (IAO) held in Piatra Neamt, Romania



Sri Lankan team represented at 16<sup>th</sup> International Junior Science Olympiad-2019 that was held in Doha, Qatar

## IPSL Olympiads Award Ceremony

The IPSL Olympiads Awards Ceremony-2019 was held on November 23, 2019 from 1:30 pm to 5:00 pm at New Arts Theatre (NAT), University of Colombo to award Gold, Silver and Bronze medals for those who had excelled in the 15<sup>th</sup> Sri Lankan Physics Olympiad Competition, 13<sup>th</sup> Sri Lankan Astronomy and Astrophysics Olympiad Competition, 9<sup>th</sup> Sri Lankan Junior Astronomy Olympiad Competition and 5<sup>th</sup> Sri Lankan Junior Science Olympiad Competition. Medal for the Best Undergraduate Physics Research Award was also presented at this ceremony. Awards Ceremony was generously sponsored by Bank of Ceylon (BOC). List of medal winners were published in the IPSL website.



IPSL Olympiads Awards Ceremony - 2019

## IPSL on Air

Interviews with the coordinators of Astronomy Olympiad, Science Olympiad and President of IPSL were broadcasted in Radio Sri Lanka (SLBC) on 22<sup>nd</sup> November 2019, 24<sup>th</sup> January 2020 and 13<sup>th</sup> Mar 2020 respectively to popularise the Institute of Physics Sri Lanka and its activities among the general public. Special thanks to Mr. Channa Kalansuriya for the coordination.



Professor KPSC Jayarathne, National coordinator astronomy and Astrophysics Olympiad, Professor HH Sumathipala, National coordinator Science Olympiad and Professor VPS Perera, President IPSL were interviewed at the Radio Sri Lanka (SLBC).

## Best Undergraduate Physics Research Project Award

In recognition of the growing significance of science and technology, and with the aim of strengthening research skills of undergraduates in the field of physics education, an annual competition for Best Undergraduate Physics Research Project Award is organized among university undergraduates in Sri Lanka, by the Institute of Physics, Sri Lanka.

Ten applications were received for the competition held on 2019 and eight applicants made presentations before the evaluation panel, which consisted of Prof. J. C. N. Rajendra, Prof. V.P.S. Perera, and Dr. (Ms.) H O Wijewardane. Members of the evaluation panel have expertise in both experimental and theoretical Physics and all of them were from universities which no applications were submitted for the competition.

Ms M. F. Shirofa was the winner of the Best Undergraduate Physics Research Project in 2019. Her research project titled “Radiation shielding material and dosimetry on I (131) treatment at the nuclear medicine” has been supervised by Dr. V Sivakumar of the University of Peradeniya.

## Membership Portal

The Membership Portal contains services for members of the Institute of Physics, Sri Lanka. The database will consist of password protected login for each member and once logged in, he or she can update his/her information. General public can view the information of the members with their consent.

## Publications

### Proceedings of the Technical Sessions

The Council published the Proceedings of the 36<sup>th</sup> Technical Sessions of the IPSL (August 2020) in the form of a printed periodical in monochrome with 119 pages and the softcopy will be uploaded to the IPSL website after holding the Technical Sessions. The members of the Technical Sessions Editorial Committee are;

- Professor K P S C Jayaratne (Chairman)
- Professor D D N B Daya
- Professor L B D R P Wijesundera
- Professor P A A Perera
- Dr. (Ms.) H O Wijewardane
- Dr. R C L De Silva (Convener, Ex-officio)
- Professor V P S Perera (Ex-officio)

### Sri Lankan Journal of Physics (SLJP)

The Volume 21 of the journal was published on-line on the IPSL web site [www.ipsl.lk](http://www.ipsl.lk), and also at the Sri Lankan Journal Online (SLJOL) system. Hardcopies of Volumes 21 will be printed and distributed to all Libraries in the state Universities in the future. The Editorial Board of the SLJP is as follows.

Editor in Chief:	Professor K.D. Jayasuriya (University of Kelaniya)
Associate Editors:	Professor W.G.D. Dharmaratne (University of Ruhuna)
	Professor J.K.D.S. Jayanetti (University of Colombo)
	Professor K.P.S.C. Jayaratne (University of Colombo)
	Professor A.G.U. Perera (Georgia State University)
	Professor D.U.J. Sonnadara (University of Colombo)
	Professor W.L. Sumathipala (The Open University of Sri Lanka)
	Professor R.C. Woods (Louisiana State University)
Ex-Officio:	Professor P. A. A. Perera (University of Kelaniya)
Copy Editor:	Professor P.S. Hewagegana (University of Kelaniya)

## The Annual Get-Together & Dinner



IPSL Annual Get-Together and Dinner - 2019

The IPSL Members' Annual Get-Together & Dinner was held after the Mailvaganam Memorial Oration on 23<sup>rd</sup> November 2019 at Hotel Janaki, No. 43, Fife road, Colombo 05 at 7.00 pm and this was open to the general membership and their spouses.