IEEE

The Institute of Electrical and Electronics Engineers, Inc.

VOLUME 49 Issue 1 March 2022

Secretariat

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IEEE NEW SOUTH WALES SECTION
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Contents:

Editorial:

This is the twenty-second newsletter I've edited. This one is being edited with the very latest stable version of Libre Office – 7.1.8.1

This continues to report our activities during the corona virus epidemic. There weren't many of them, since we exist to bring people together and this isn't a good idea even near the end of an epidemic.

Vaccination may now be covering the five - to eleven-year-olds but there may still be a way to go before we will be able to generate a lot of activity to report. My fully vaccinated 18-year-old grand-niece managed to infect her fully vaccinated and boosted grandmother. Neither of them got all that sick, and neither stayed sick for long, but long enough to mess up the family Christmas (again).

Meanwhile we've done a deal with Engineers Australia, one aspect of which shows up in the full page ad for their courses on page 8 of this issue.

This is issue took longer to come out than it should have - Colin's chairman's message finally showed up a week later than the rest of the copy, and I'm not happy about it,

Chairman's Message,

This is the first issue for 2022. COVID is going to the back of our minds as most restrictions have been lifted, and face to face events can be on the agenda.

I am an advocate of hybrid events, where possible, to enable those who previously could not attend, due to distance or time constraints, to participate. The Section will consider the recording of events, if members believe there is a need.

The Section does have a YouTube Channel

https://www.youtube.com/channel/UCcHapDQ69e6XXlzH2R1Ui9Q.

The IEEE has ten Regions and the NSW Section is in Region 10 (Asia/Pacific). It is the biggest both in size and numbers. It is proposed to split the Region into two (north and south) in a couple of years time.

The Region 10 Annual Meeting was held on 26 -27 February 2022 and was attended by Section Chairs, Chairs of the Regional group committees, and representatives from HQ. There were presentations from President, HQ staff, Regional committees and the three conferences (TENCON, TENSYMP and R10-HTC) that the Region supports.

For those who are interested, the slides from the presentations can be found from the agenda that can be found https://www.ieeer10.org/2022-r10-annual-meet/.

I would recommend that you view the President – Ray Liu's speech. - <http://ieeetv.ieee.org/ns/ieeetvdl/2022/CA_Items_2022/2022_Ray_LIU_IEEE_Your_Professional_Home_2022-lo.mp4>

Note the phrase: - IEEE – Your Professional Home

Ours activities for 2022 involve

- Planning for UNITE2022 on the 8th July, with the venue booking is just completed.
- Celebrations of the 50th Anniversary of the NSW Section. Gala dinner on Friday 19 August.
- Fortnightly luncheons, organised by Life Members Affinity Group, for all members with the venue changing every time, so one will be close to you. This is not going to be a Sydney-centric activity. Please let us know a suitable venue near you.
- Section participation in JILS program. The program is a set of 1 hour lectures arranged by members from EA, IET and IEEE to keep members up to date with current trends in industry and research.
- An agreement has been made with EA Education group, so that IEEE member can participate in their training at a 10% discount on the non-member rate. See page 8.
- Investigations are currently being undertaken on what affiliations with groups within EA would be to benefit of IEEE members. Similar affiliations with other groups will be considered. If any member has a suggestion of a group that should be considered, could they please advise me?

- Involvement of the Section in STEM outreach. Train the volunteers. How does the Section promote IEEE while working with other groups?

- Chapters and Groups will have their own plans for 2022. If you have an interest in a particular area, make sure that the group is aware of your interest. All groups are ready to welcome you.

The Australia Council has arrangements with Medibank and Dell Computers which offer IEEE members access to special deals and rates. Details at the end of this message – 'Corporate offers'.

We - the committee - are trying to meet our members' needs, either through Section events or events organised by our Chapters and Groups. We all need to understand what you - as members - need. It does not need to be a technical need. Please let us know. Note the catch phrase – Your Professional Home.

If you are involved in an activity or know of an activity that others should know about, also let us know.

Finally, we are all volunteers and are always looking for others to help. May be you would like to organise an event or assist. We need people with ideas.

We are looking for people to assist in the STEM outreach. Please contact Graham Town <graham.town@mq.edu.au>, if you can help.

Hope to see you at an IEEE event.

Regards,
Colin Elston
Chair, IEEE NSW Section

The Corporate offers

The agreement with Medibank is a 7% discount and they will waive the waiting period if one joins before 12 April. Details can be found at https://corporate.medibank.com.au/ieee

The partnership with Dell enables IEEE members in Australia to benefit from an array of benefits including special discounts and dedicated small business advisors to help provide tailored solutions catered to specific business needs. The benefits include:

- An additional 10% OFF Dell Latitude, Optiplex, PowerEdge, Dell Networking, Storage, Monitors & Accessories.

- An additional 7% OFF Dell XPS, Alienware, Vostro & Inspiron.

All you need to do to access these benefits is to follow these three simple steps:

Step 1: Download a Coupon by clicking and entering code "IEEEAU" here:

https://www.dell.com/en-au/work/lp/associationsoffer

Step 2: Check your email to retrieve the Coupon (sent via email from Dell to your email address entered in Step 1)

Step 3: Shop Deals (Enter Coupon at Checkout)

Awards and Recognition

Stefan Mozar wins MGA Leadership Award

Dr' Stefan Mozar, FIEEE has been given the MGA Leadership Award for *"For leadership in establishing a consumer electronics chapter-based global community within IEEE"*

Dr. Mozar has previously won the IEEE Region 10 Outstanding Volunteer Award in 2015. He has served NSW Section, Region 10 and IEEE in numerous capacities including President of the Consumer Electronics Society(2013-2014) and President of the Product Safety Engineering Society(2020-2021).

Dr. Mozar has in addition served IEEE at many levels, Chapter, Section, Council, Region, Society, MGA, EAB and TAB. He has also taken part in Fellow Committee Activities(Fellow Evaluation) and continues his participation to this date and into the future.

Region 10 Outstanding Volunteer Award

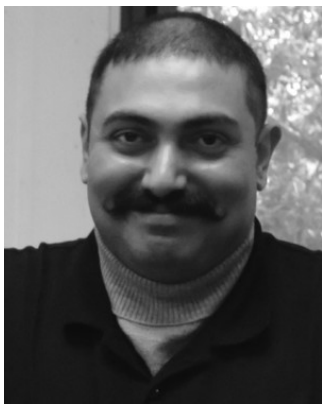
The announcement that Past NSW Section Chair Prof Karu Esselle, FIEEE, FRSN, FIEAust has been awarded the 2021 Region 10 Outstanding Volunteer Award was made in October 2021 CIRCUIT.

Karu is the Distinguished Professor in Electromagnetic and Antenna Engineering at University of Technology Sydney and is a world leader in the field.

Amongst his most recent achievements are the most prestigious Defence Connect Excellence Award – the first resident of New South Wales to receive this award and the 2021 Academic of the Year at the 2021 Australian Defence Industry Awards

NSW Outstanding Volunteer Awards

The 2021 NSW Outstanding Volunteer Award winners were;



Young Professionals OVA winner: BUDHADITYA MAJUMDAR, *for his contributions to IEEE NSW Section, Robotics and Automation Chapter and IEEE NSW Young Professionals*

Budhaditya Majumdar (Member, IEEE) received his Ph.D. from Macquarie University in 2017. He is currently the Chief Electrical Engineer at Robo Helix A.U.
Budha is the founding and current Chair of the IEEE NSW Section Robotics and Automation Chapter(formed in late 2019),
He has organised numerous events and Lectures for the Chapter and is actively trying to promote Robotics in Schools.

Young Professionals OVA commendation: NAILA MUKHTAR, *for her contributions to IEEE NSW Young Professionals, IEEE Women in Engineering, and IEEE NSW Section*

Dr Naila Mukhtar completed her PhD at Macquarie University in 2019 and is a Casual Academic at the University. She is the Chair of the IEEE NSW WIE Affinity Group, Vice Chair of the NSW Computer Chapter and Webmaster and Social Media Coordinator for the R10 Newsletter. Naila contributed significantly at IEEE ANZSCON 2017, IEEE TENSYMP 2018, and IEEE UNITE 2019.

Women in Engineering OVA winner: HIJAB ZAHRA, *for her contributions to IEEE NSW Section and Women in Engineering*.

Dr Hijab Zahra is the Chair of the IEEE NSW Young ProfessionalsAffinity Group. She has held numerous positions in Young Professionals and WIE Affinity Groups and the Macquarie University Student Branch. She has also volunteered at several conferences including TENSYMP 2018, SYWL 2020 and ANZSCON 2017.

Student OVA winner: ISHAN KAVINDA KARUNANAYAKE, *for his contributions to the IEEE UNSW Student Branch, IEEE NSW Section, and IEEE Region 10.*

Ishan is the Student Branch Chair – IEEE UNSW SB(since Jan 2021) turning it into one of the most active Student Branches in the Section and to increase awareness amongst Students of IEEE. He has previously been an active IEEE Volunteer affiliated with the IEEE Sri Lankan Section and IEEE University of Moratuwa Student Branch.

There were no Nominations for the NSW OVA Category.
It is hoped that the actual presentations for all awards(2020 and 2021) will take place in 2022 at physical meeting to be decided by the IEEE NSW Section Committee.

Contributed by Tony Zaglas,
IEEE NSW Section Awards and Recognition Chair 2021

50 years of IEEE in Australia

As announced in the October 2021 edition of CIRCUIT we will be celebrating the IEEE NSW Section 50th Anniversary in 2022. The NSW Section History Committee headed by Drs Ramutis Zakarevicius and Graeme Gwilliam has been charged with organising the celebrations with the highlight being a Gala Dinner to be held on 19 August 2022 at a prominent, conveniently accessible venue.

The History Committee is organising the publication of a commemorative book documenting the History of the IEEE NSW Section and it's contributions to NSW, Australia and Worldwide. Members that are able to contribute in terms of documented significant events, documents, history, photographs, memorabilia and the like please contact Dr Graeme Gwilliam.

You may have noticed that on the NSW Section's webpage we have posted editions of CIRCUIT dating back to 2001. The Committee is endeavouring to collect and post on the website as many editions of the Newsletter as can be found right back to the formation of the Section in August 1972.

If members have copies of CIRCUIT, in particular the early years(1970s and 1980s) they can contact me. PDF copies of the Newsletter are desirable and if members need help in scanning and converting hard copies please contact me or the History Committee.

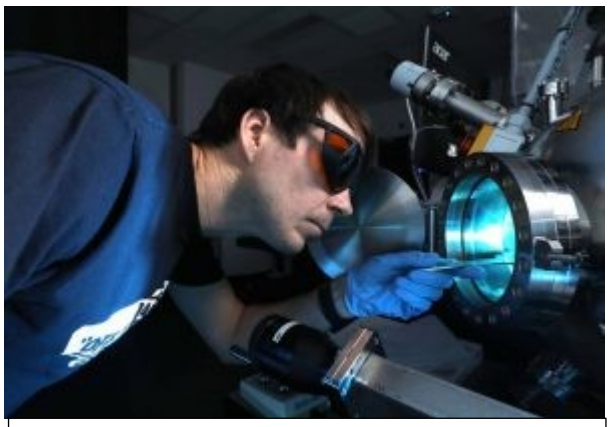
Contributed by Tony Zaglas,

Stress can be good for you: enhancing piezoelectric properties under pressure

Stress enhances the properties of a promising material for future technologies.

UNSW researchers have discovered a new exotic state of one of the most promising multiferroic materials, with exciting implications for future technologies using these enhanced properties.

Combining a careful balance of thin-film strain, distortion, and thickness, the team has stabilised a new intermediate phase in one of the few known room-temperature multiferroic materials.



Lead-author Dr Daniel Sando preparing materials for study at the School of Materials Science and Engineering (UNSW, Sydney)

The theoretical and experimental US-Australian study shows that this new phase has an electromechanical figure of merit over double its usual value, and that we can even transform between this intermediate phase to other phases easily using an electric field.

As well as providing a valuable new technique to the toolkit of all international material scientists working with multiferroics and epitaxy, the results finally shed light on how epitaxial techniques can be used to enhance functional response of materials for future application in next -generation devices.

Stress Changes Everything

When we apply stress to crystals, they become strained and can change their structure and physical properties dramatically. We utilise this in everyday technology, using external stimuli to bend material properties.

When we strain thin films on substrates, the building blocks of the film will deform to match the sizes of the building blocks of the neighbouring substrate.

“We applied different strain in different directions, creating complicated strain states that forced the film into new phases,” says first author Oliver Paull (UNSW).

It's Magneto-Electric, it's Piezo-electric, it's Photovoltaic… it's greased lightning.

$BiFeO_3$ (or BFO) boasts an impressive resume of multifunctional properties, including piezo-electric, ferro-electric, magnetic, and optical properties.

BFO is arguably the most popular magnetoelectric material for researchers (ie, a material that has both magnetic and electrical ordering that can influence each other).

Magneto-electric materials are highly interesting for spintronics and memory applications since the coupling between magnetism and ferro-electricity promises low energy technologies. (Writing data with an electric field is much more efficient than writing with magnetic field.)

Not only is BFO magneto-electric, but it is one of the very few materials that is magneto-electric at room temperature, making it viable for use in applications such as future low-energy electronics,

without the requirement for energy-intensive cryo-cooling.

Only very few multiferroic materials (ie, materials that have both magnetic and electrical order) exhibit these useful properties at room temperature.

In addition to this, BFO boasts other functional properties, not only piezo-electricity, ferro-electricity, photovoltaic effects, but even more!

It's also lead free, giving it a clear advantage against most high-performing piezoelectric materials, which unfortunately contain toxic lead.

Piezoelectric materials, which can convert mechanical pressure into electrical energy, have wide applications as ultra-high-sensitivity sensors in devices such as smart-phone motion sensors and pacemakers (where avoiding toxic materials is obviously an advantage…).

By using highly miss-cut substrates, the research team pushed BFO into a new phase that is essentially the link between the well-known rhombohedral-like and tetragonal-like phases.

This, coupled with the symmetry-related properties of the phase, allows it to be easily influenced by electric fields.

"Other engineers have used fairly standard commercial substrate orientations," says head investigator Daniel Sando. "so we asked our providers to custom-make different miss-cut orientations in between the standard orientations, which led to the discovery of the new phase. We asked ourselves if the reason people hadn't done this before is that the crystallography involved with these miss-cuts is rather complex and can be intimidating!"

The researchers demonstrated that this new phase has a much higher electro-mechanical response than traditional BFO.

This low-symmetry phase can be converted into a higher-symmetry phase using an electric field, and as a result can enhance the electromechanical response by a factor of three.

A Multipurpose Tool: Applying the Approach to a Broad Range of Oxide Materials

One of the most appealing aspects of this discovery is its general methodology and applicability to a broad class of materials systems.

"We chose to focus on $BiFeO_3$ due to its ferroelectric, magnetic, and piezoelectric properties, but the approach is easily applied to other perovskite oxides," says Oliver Paull.

"The scope for using this technique is huge. If you're dealing with epitaxy, then this anisotropic technique could prove very fruitful for your research."

There are even broader possible applications: Piezoelectrics used in sensors and actuators are typically lead-based compounds in bulk form. This is now very research-oriented, but there could be applications in such industries as nano-actuators or sensors.

"Anisotropic epitaxial stabilization of a low-symmetry ferroelectric with enhanced electromechanical response" was published in Nature Materials in September 2020. (DOI: 10.1038/s41563-021-01098-w) Full access link (Springer Nature Content Sharing Initiative).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31 OCT – 3 NOV 2022
KEY DATES
Special Session Proposal Deadline
18-Mar-2022
Notification of Acceptance of Special Sessions
3-Apr- 2022
Manuscript Submission Deadline
29-May-2022
Notification of Paper Acceptance
22-Jul-2022
Early-bird Registration Deadline
09-Sep2022
ISAP2022 @ Darling Harbor
31 Oct – 3 Nov 2022
European-Australian School of Antennas
4-6 Nov 2022
https://isap2022.org/
MTT-S
IEEE NSW AP/MTT CHAPTER


15th International Conference on SENSING TECHNOLOGY
IEEE
SYDNEY, AUSTRALIA
5-7 DEC 2022
NSSN
ICST'15 SYDNEY
KEY DATES
Manuscript Submission Deadline
15 Jul 2022
Acceptance Notification
30 Aug 2022
Camera Ready Submission
30 Sep 2022
Advanced Registration
30 Sep 2022
https://icst2022iitm.in/sydney/

New and Upgraded Members.

For the period from the 1st October 2021 to the 31st January 2022.

New Fellows

None

Life Fellows

We have no new life fellows.

Life Senior Members

We don't have any new life senior members either. Eleven people got promoted with effect from the 1st January 2022, but their names got listed prematurely in the October 2021 Circuit.

Life Members

We have two new life members. As with the life senior members a bunch got promoted with effect from the 1st January 2022, but their names got listed prematurely in the October 2021 Circuit.

John	A	Watson	Stephen	S	Webb

Senior Members

We have five new senior members.

Julien	R	Epps	Saeid		Iranmanesh
Wei		Liu	Robert	Shuhdi	Salmana
Emre		Sariyildiz			

Members

We have a lot more new members - 46 of them.

Abeer	Husham	Alsadoon	Pasindu	Dissan	Aluthwala
Mir	Nahidul	Ambia	Tony		Bazouni
John	David	Beechey	Kellie		Bohlsen
Peter	David	Bradley	Mohammadreza		Chamanbaz
Wai	Tony	Chung	Thomas	Joseph	Cooper
Stephen	J	Graham	Peter	J	Hanselmann
Yueh	Chen	Hsia	Jing		Jiang
Humayun		Kabir	Joseph	M	Kam
Dongnan		Liu	Guodong		Long
Ross	W	Mark	Troy	Timothy	McCann
Scott		Miller	Surya		Nepal
Christopher		Orfanos	Jayson		Patrick
Rollsy		Ponmattam Madassery	Karl		Popp
Robin	Chacko	Puliparambil	Andrew		Repton
Max		Revay	Chris		Rosewarne
Utsho		Roy	Daniel		Sando
Haifeng		Shen	Kenneth	William	Smart

Shaleeza	Sohail	Guoxin	Su
Vishal	Verma	Antonio	Vizza
Bo	Wang	Xuekuan	Xie
Chang	Yan	Xinghao	Yang
Rowan	Yap	Rui	Zhang
Sipei	Zhao	Liya	Zhao

New Graduate Student Members

We have 60 new graduate student members

Queen A	Aigbefo	Mahmuda	Akter
Abdulrahman	Alhariqi	Hamzeh	Aljarajreh
Gunter Stephan Avila	Correa	Adhil	Badat
Mahmuda	Begum	Hamideh	Bour
Lisheng	Chen	Nam Hoai	Chu
David	Cleminson	Zhongli	Dong
Bruno	Galati	Fillipe	Georgiou
Brendan	Halloran	Waqas	Hassan
Touseef	Hayat	Yi	He
Victor Hernandez	Moreno	Md. Biplob	Hossain
Louis	Hourany	Muzaffar	Hussain
Marcel	Julliard	Jichao	Kan
Samadhi Kaushalya Korale	Liyanage	Siyuan	Li
Xiaojie	Lin	Hangrui	Liu
Nathan Kush	Long	Tingyu	Lu
Rammohan Rao	Makineni	Anand	Mandal
Khawaja Fahad	Masood	Finlay	McCall
Jack	Naylor	Jared	Newell
Yige	Peng	Pathirage Yuvin Nelaka	Perera
Alejandro	Ranchal Pedrosa	Farhan Ahnaf	Rashid
Simanto	Saha	Pejush Chandra	Sarker
Thomas	Sear	Mohamad Arsalan	Sheikh
Mohammad Khubeb	Siddiqui	Lizhao	Song
Xiu	Su	Yaroslav	Syasegov
Cameron	Walters	Yingqi	Wang
Bowen	Wang	Lei	Xiao
Da	Xiao	Ruida	Xie
Meng	Xu	Hongyan	Xu
Zhenxu	Yang	Hang	Zhao
Jiahong	Zhao	Yi	Zhao

New Student Membership

We have 16 new student members.

Yuet	Lee	Chan	Joshua	Thomas	Chin
Hugo		Currie	Benjamin	James	Essam
Shaedon		Flanagan	Anthony	James	Guihot
Yifei		Han	Yubai		Jiang
Mengze		Li	Lixue		Liang
Leon		Luo	Nur	Hasnina Binti	Nazran
Minh	Quyen	Nguyen	Satyavani		Varanasi
Le	Tung	Vu	Xinruo		Zhang

New Affiliate Members

We have three of them.

Gang	Huang	Travis N	Stenborg
Sasikumar	Venkatachalam		

New Associate Members

We have three of them too.

Kun	Hu	Kayleen	Manwaring
Ingiriya Arachchige Thaminda Roshan Perera			

Any student members who would like to be on the Student Branch Committees and any members, especially academic staff, who would like to be their mentors, please contact
Arslan Kiyani arslan.kiyani@mq.edu.au (student activities chair) or
bruce.poon@ieee.org (0414 662 766) to register your interest.

There are a numbers of members who are qualified to be senior members.
If you are interested to upgrading your membership,
please do not hesitate to contact me at 0414 662 766.

"Membership" for Life members are free. However, you do need to renew it annually.
Renewal is simple & easy and can be done via the IEEE web site.
If you have not renewed your Life Membership, please log onto IEEE website to do it.

Submitted by Dr. Bruce Poon – e-mail bruce.poon@ieee.org

IEEE Limited Offer*

If you are a 3rd, 4th or a post-grad student in 2022**

The IEEE NSW Section will sponsor your student membership fee !

Instructions :

1. Go to www.ieee.org/join and register as Student Member.

2. Type in all your details. On the check-out process, press 'Print & Mail/Fax order' instead of 'Proceed to checkout'. From the browser menu, print to PDF.

Ensure your postal address and contact details will be valid for the next 12 months or more. Instead of sending the form to IEEE HQ USA, please forward a PDF copy of this application with **Member/Customer number** under "**Order Information**" (Name of the File: your name-IEEE NSW student membership offer.pdf) and a copy or your current student card (Name of the File: your name.pdf) to:

Arslan Kiyani ------ IEEE NSW Student Activities Chair
e-mail: arslan.kiyani@gmail.com

cc Dr Bruce Poon ------ IEEE NSW Membership Development Chair
e-mail: bruce.poon@ieee.org

If you are students of the following universities, please cc a copy of your application to the student branch (SB) chairs :

1. Charles Sturt University SB Chair : Binod Syangtan (binodsyangtan220@gmail.com)
2. Macquarie University SB Chair : Samta Sapra (samta.sapra@students.mq.edu.au)
3. University of New South Wales SB Chair : Jayden Moore (jayden.moore@student.unsw.edu.au)
4. University of Sydney SB Chair : Lewis Watts (lwat0045@uni.sydney.edu.au)
5. University of Technology Sydney : Lanh Van Nguyen (lanhvan.nguyen@student.uts.edu.au)
6. University of Wollongong SB Chair : Rammohan Makineni (rrm358@uowmail.edu.au)
7. Western Sydney University SB Chair : Reenu Tresa Jacob (18770429@student.westernsydney.edu.au)

** The number of free student memberships is **limited** and will be awarded on a first come first serve basis.This offer excludes membership to individual IEEE societies which may be purchased separately. This offer is available only to students located in New South Wales. The free student membership offer covers the first year of membership only. Offer not available to current or past IEEE members/student members. Deadline for submission is 4:00pm on the **31st of March 2022 or when quota is filled** **(whichever comes first)** and all applications will be processed from the beginning of April 2022.*
*** Please attach a copy or your current student card.*

Circuit is currently provided electronically from the IEEE NSW Section web site

https://site.ieee.org/nsw/newsletters/

Members will be notified by email when a new issue is posted on the Website. Future copies of **Circuit** will only be sent by paper mail on request.

If you require Circuit to be mailed to you in 2022 please complete the form below:
Don't bother if you were already getting it by mail in 2021.

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Post to: Bill Sloman,**Circuit Editor, Unit 60, 1Tewkesbury Avenue, Darlinghurst NSW 2010**