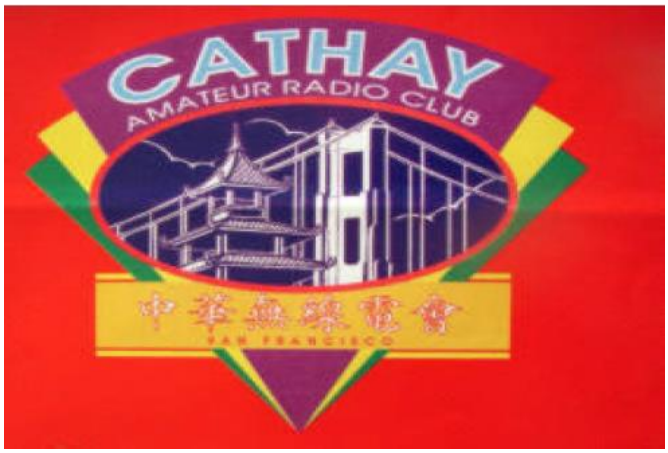

Cathay May 2021

www.cathayradio.org

President: George Chong, W6BUR **email:** *W6BUR@comcast.net*
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Web Master: Edison Fong – *WB6IQN* - **email:** edison_fong@hotmail.com
Mission: The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

Monday Night Net Time: 9 PM Local Time/PST, Repeater: WB6TCS - RX 147.210, TX 147.810, Offset +0.6 MHz, CTCSS/Tone PL100 Hz

Please note: Repeater: N6MNV UHF 442.700 Mhz, Offset +5MHz, CTCSS/Tone PL 173.8 Hz in South San Francisco is cross linked every Monday Night Net at 9 p.m. to WB6TCS 2-meter repeater.

The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

Message from the President: George Chong, *W6BUR*

Hello CARC Members and Friends;

Many thanks to Mr. Denis L. Moore – WB6TCS for the use of his repeater for our CARC Monday Night Net.

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

I also wish that our CARC member have a Happy Easter with family members.

California COVID-19 Vaccines

The California COVID-19 Vaccine age requirements have been relaxed such that everybody age 16 and up may now qualify to receive the COVID-19 vaccination shot.

Please visit web site https://myturn.ca.gov/ to schedule a vaccination shot at one of the multiple sites that are close by your home/office and are taking and scheduling appointments.

As of May 1, 2021, in California 40.2% of the population has been fully vaccinated (https://covid19.ca.gov/vaccination-progress-data/). The nation (USA) as a whole currently has a 31.0% fully vaccination rate.

Fully vaccination population percentage in other countries

- https://covid19.ca.gov/vaccination-progress-data/
- https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html
- https://time.com/5956371/olympics-covid-vaccinations-japan/
- https://www.dw.com/en/covid-19-why-is-chinas-vaccination-rate-so-low/a-57183859

Australia: < 3%	France: 9.4%	Italy: 9.9%	Spain 10.0%
Canada 2.9%	Germany 7.7%	Japan 0.8%	South Korea: 0.4%
Chile: 35%	Ireland: 8.5%	Mexico: 5.6%	UK: 22%
China:<8%	Israel: 56%	Russia:5.2%	India: 1.9%

Tech Article Introduction:

This month's tech article contains a brief write up on UC Berkeley announcement of Tiny Wireless Implant. That is powered by ultrasonic waves.

In an earlier issue of the CARC Newsletter, an article discussing Anna Poon's idea of implanting tiny wireless devices that were powered by transmission of midfield electric fields.

The use of using ultrasonic waves offers an important alternative to midfield electric fields.

Please see the Tech Article section, Tiny wireless implant

Chat sub s'em to all you CARC members! - George W6BUR.

Public Service Announcements

HAM CRAM / HAM Licensing

For upcoming HAM Licensing locations please refer to:
http://www.arrl.org/find-an-amateur-radio-license-exam-session

Auxiliary Communications Service (ACS)

The Auxiliary Communications Service (ACS) was organized by the San Francisco Office of Emergency Services (OES) following the 1989 Loma Prieta Earthquake to support the communications needs of the City and County of San Francisco when responding to emergencies and special events.

The Auxiliary Communications Service holds General Meetings on the third Tuesday of each month at the San Francisco Emergency Operations Center, 1011 Turk Street (between Gough Street and Laguna Street), from 1900 hours to 2100 hours local time. All interested persons are welcome to attend.

The ACS Net begins at 1930 hours (7:30 p.m.) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS Members should perform Net Control duty on a regular basis. On the second Thursday of each month, the net will be conducted on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz, simplex.

For more information, please attend an ACS meeting or check in on a net, or call 415-558-2717.

Upcoming meetings: TBD

Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).

http://sf-fire.org/calendar-special-events

+ May NERT Drill - Saturday May 17, 2021

Spring into Readiness!
This Virtual Drill will take place from 9am-12pm with virtual skill rotations and words from some special guests!

Invitation and sign-up coming next week!

+ Recertifications - Coming Soon!

Now that San Francisco has entered the Red Tier for COVID-19 Transmission (see https://covid19.ca.gov/safer-economy/#county-status for more details), we are working to schedule recertification trainings for NERTs who were current as of December 2019 or later. Stay tuned for details and times over the next month! (At this time, all class 5&6 recerts will take place outdoors only, at the SFFD Division of Training at 19th St & Folsom St in the Mission.)

***SFFD DOT** is the Fire Department Division of Training. All participants walking, biking or driving **enter through the driveway gate on 19th St.** between Folsom and Shotwell. Parking is allowed along the back toward the cinderblock wall.

Visit ***www.sfgov.org/sffdnert*** to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will no longer need to complete the Fire Department's Neighborhood Emergency Response Team (NERT) (www.sfgov.org/sfnert) training and then graduate into two 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

SFPD ALERT Training (New Members)

The next SFPD ALERT training class has been scheduled for

#023-Day #1 New Volunteer Basic Class
Saturday March 13, 2021 9 AM – 3 PM via ZOOM

#023-Day #2 New Volunteer Intermediate Class*
Saturday March 27, 2021 9 AM – 3 PM via ZOOM

-#023-Day #3 Practicum & Graduation*
Sunday May 11, 2021, 9 AM – 1 PM (In-person)

Principled Policing, Procedural Justice, and Implicit Bias Mandatory Training
(To Be Determined)

(New ALERT volunteers must complete Day #1 FIRST. Training marked with an asterisk * must be completed within 12 months of completing Day #1 to graduate.)

The in-person classes will be held at the San Francisco Police Academy, in the parking lot bungalow, from 9am-1pm on Sunday May 11, 2021.

* Class date indicated are only for new members

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, Marina at sfpdalert@sfgov.org, or by telephone at 415-401-4615.

SFPD ALERT Practice/Training Drill

All active/trained ALERT members are asked to join us for our next training drill, scheduled for on

#028 Saturday 08/21/2021 9 AM – 1 PM by ZOOM

#029 Saturday 11/06/2021 (Night Exercise)

For more information on the San Francisco Police Department ALERT Program, email us at sfpdalert@sfgov.org, or call Lt. Marina Chacon (SFPD Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:
https://sfgov.org/policecommission/alert

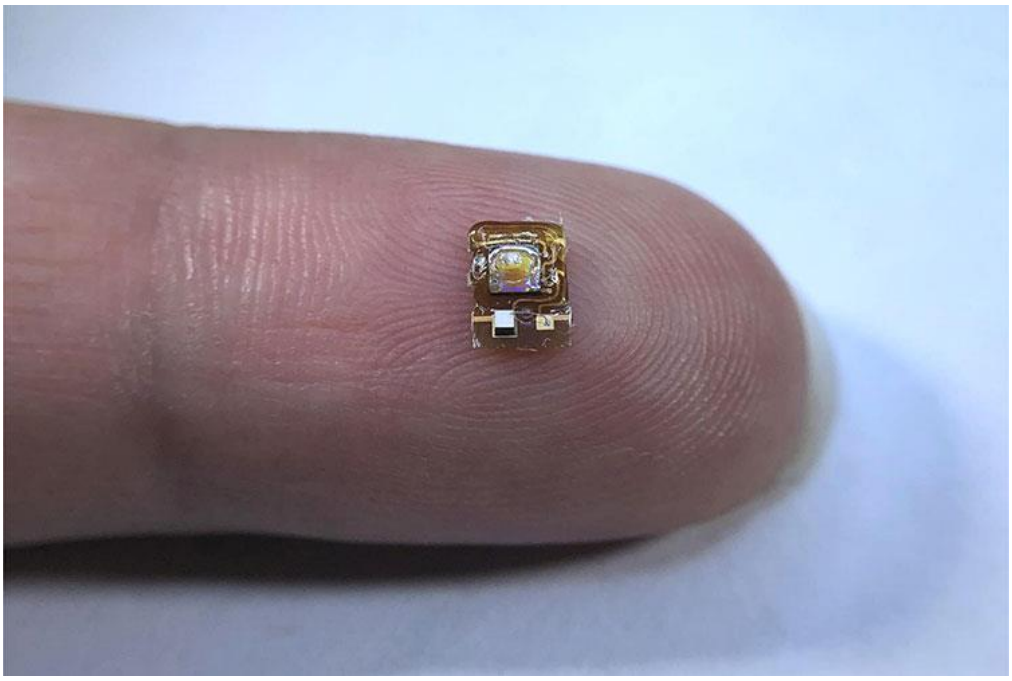
Tech Article

Berkeley News

Tiny wireless implant detects oxygen deep within the body

By Kara Manke| April 14, 2021

https://news.berkeley.edu/2021/04/14/tiny-wireless-implant-detects-oxygen-deep-within-the-body/



This wireless implant, developed by engineers at the University of California, Berkeley, can measure the oxygenation of living tissue deep below the surface of the skin. (UC Berkeley photo by Soner Sonmezoglu)

Engineers at the University of California, Berkeley, have created a tiny wireless implant that can provide real-time measurements of tissue oxygen levels deep underneath the skin. The device, which is smaller than the average ladybug and powered by ultrasound waves, could help doctors monitor the health of transplanted organs or tissue and provide an early warning of potential transplant failure.

The technology, created in collaboration with physicians at the University of California, San Francisco, also paves the way for the creation of a variety of miniaturized sensors that could track other key biochemical markers in the body, such as pH or carbon dioxide. These sensors could one day provide doctors with minimally invasive methods for monitoring the biochemistry inside functioning organs and tissues.

“It’s very difficult to measure things deep inside the body,” said Michel Maharbiz, a professor of electrical engineering and computer sciences at UC Berkeley and a Chan Zuckerberg Biohub Investigator. “The device demonstrates how, using ultrasound technology coupled with very clever integrated circuit design, you can create sophisticated implants that go very deep into tissue to take data from organs.”

Maharbiz is the senior author of a new paper describing the device, which appears in the journal *Nature Biotechnology*.

Oxygen is a key component to cells’ ability to harness energy from the food that we eat, and nearly all tissues in the body require a steady supply in order to survive. Most methods for measuring tissue oxygenation can only provide information about what is happening near the surface of the body. That is because these methods rely on electromagnetic waves, such as infrared light, which can only penetrate a few centimeters into skin or organ tissue.

While there are types of magnetic resonance imaging that can provide information about deep tissue oxygenation, they require long scanning times, and so are unable to provide data in real-time.

Since 2013, Maharbiz has been designing miniaturized implants that use ultrasonic waves to wirelessly communicate with the outside world. Ultrasonic waves, which are a form of sound too high in frequency to be detected by the human ear, can travel harmlessly through the body at much longer distances than electromagnetic waves and are already the basis of ultrasound imaging technology in medicine.

One example of such a device is Stimdust, designed in collaboration with UC Berkeley electrical engineering and computer sciences assistant professor Rikky Muller, which can detect and stimulate electrical nerve firings in the body.

Soner Sonmezoglu, a postdoctoral researcher in engineering at UC Berkeley, led the effort to expand the implant’s capabilities to include oxygen sensing. Incorporating the oxygen sensor involved integrating both an LED light source and an optical detector into the tiny device, as well as designing a more complicated set of electronic controls to operate and read out the sensor. The team tested the device by monitoring the oxygen levels inside the muscles of live sheep.

Sonmezoglu points out that this type of oxygen sensor differs from the pulse oximeters that are used to measure oxygen saturation in the blood. While pulse oximeters measure the proportion of hemoglobin in the blood that is oxygenated, the new device is able to directly measure the amount of oxygen in tissue.

“One potential application of this device is to monitor organ transplants, because in the months after organ transplantation, vascular complications can occur, and these complications may lead to graft dysfunction,” Sonmezoglu said. “It could be used to measure tumor hypoxia, as well, which can help doctors guide cancer radiation therapy.”

Study co-authors Jeffrey Fineman and Emin Maltepe, who both are pediatricians at UCSF and members of the Initiative for Pediatric Drug and Device Development, became involved in the work because of its potential for monitoring fetal development and caring for premature babies.

“In premature infants, for example, we frequently need to give supplemental oxygen but don’t have a reliable tissue readout of oxygen concentration,” Maltepe said. “Further miniaturized versions of this device could help us better manage oxygen exposure in our preterm infants in the intensive care nursery setting and help minimize some of the negative consequences of excessive oxygen exposure, such as retinopathy of prematurity or chronic lung disease.”

The technology could be further improved, Sonmezoglu said, by housing the sensor so that it could survive long term in the body. Further miniaturizing the device would also simplify the implantation process, which currently requires surgery. In addition, he said, the optical platform in the sensor could be readily adapted to measure other biochemistry in the body.

“By just changing this platform that we built for the oxygen sensor, you can modify the device to measure, for example, pH, reactive oxygen species, glucose or carbon dioxide,” Sonmezoglu said. “Also, if we could modify the packaging to make it smaller, you could imagine being able to inject into the body with a needle, or through laparoscopic surgery, making the implantation even easier.”

This work was supported by the Chan Zuckerberg Biohub and by the National Institutes of Health’s Eunice Kennedy Shriver National Institute of Child Health and Human Development through grants R44HD094414 and R01HD07245.

RELATED INFORMATION

- Monitoring deep-tissue oxygenation with a millimeter-scale ultrasonic implant (*Nature Biotechnology*)
- Berkeley engineers build smallest volume, most efficient wireless nerve stimulator