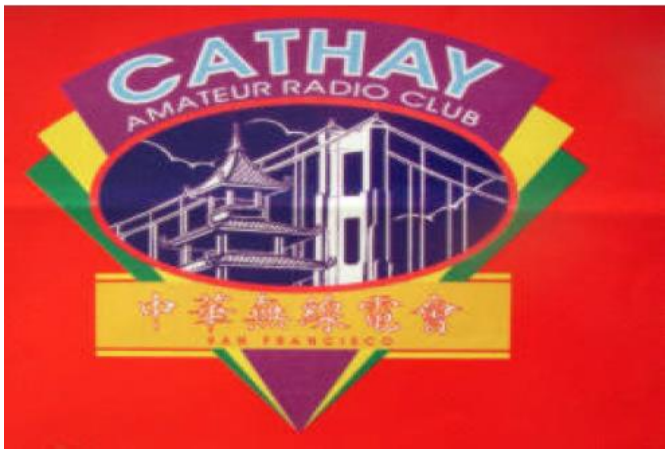


Cathay August 2021

www.cathayradio.org

President: George Chong, W6BUR **email:** *W6BUR@comcast.net*
Vice President North: Leonard Tom, *NX6E* **email:** nx6e@hotmail.com
Vice President South: Bill Fong, *W6BBA* - **email:** w6bba@arrl.net
Secretary/Membership: Rodney Yee, *KJ6DZI* - **email:** rodyee2000@yahoo.com
Editor: Rodney Yee, *KJ6DZI* - **email:** rodyee2000@yahoo.com
Treasurer: Vince Chinn aka Mingie, *W6EE* - **email:** vince@vincechinncpa.com
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 hope you are all enjoying the 2020 Tokyo Olympics games. It is a reminder that life goes on in the face of adversity and that the human spirit can triumph over incredible odds.

I am very painfully aware the COVID-19 pandemic is still dragging on and that is why we need to hang tough to get through this together. Believe it or not, many of our members are in public service and we are looked upon to provide a calmness and stoic nature of confidence that we will all get thought this pandemic.

Please remember to do your part by continuing to wear your mask and wash your hands when in public. Thank you for being the "Best of The Best, Our CARC Members Rocks".

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

Tech Article Introduction:

This month's tech article was provided by Ron Quan (KI6AZB). It is about a prototype injectable tiny microchip that will measure body temperature. It represents the first of many possible medical uses such as measuring glucose blood levels, oxygen saturation, and many other medical measurements.

Please read the latest press release from Columbia University of New York that is located in the Tech Article Section of this newsletter.

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) is a unit of trained professionals who supply communications support to the agencies of the City and County of San Francisco, particularly during major events/incidents. ACS goals are the support of gathering and distribution of information necessary to respond to and recover from a disaster.

The ACS Net begins at 1930 hours (7:30 p.m. PT) 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 perform Net Control duty on a regular basis. On the second Thursday of each month, the net is conducted in simplex mode on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz.

ACS holds its General Meetings on the third Tuesday of each month from 1900 hours to 2100 hours local time. Currently meeting are exclusively conducted over Zoom during the COVID-19 pandemic, ACS looks forward to meeting in person again as soon as possible.

Upcoming meeting dates in 2021 are:

- August 17,2021
- September 21,2021
- October 19, 2021
- November 16, 2021

Location of in person future ACS meetings are yet to be determined as the regular location is under reconstruction until January 2023. All interested persons are welcome to attend. For further information, contact Corey Siegel KJ6LDJ <kj6ldj@gmail.com>.

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

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

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

+ TBD

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: TBD

* 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, via scheduled for on

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

#029 Saturday 11/06/2021 6pm -10 pm via ZOOM (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

Tiny, Wireless, Injectable Chips Use Ultrasound to Monitor Body Processes

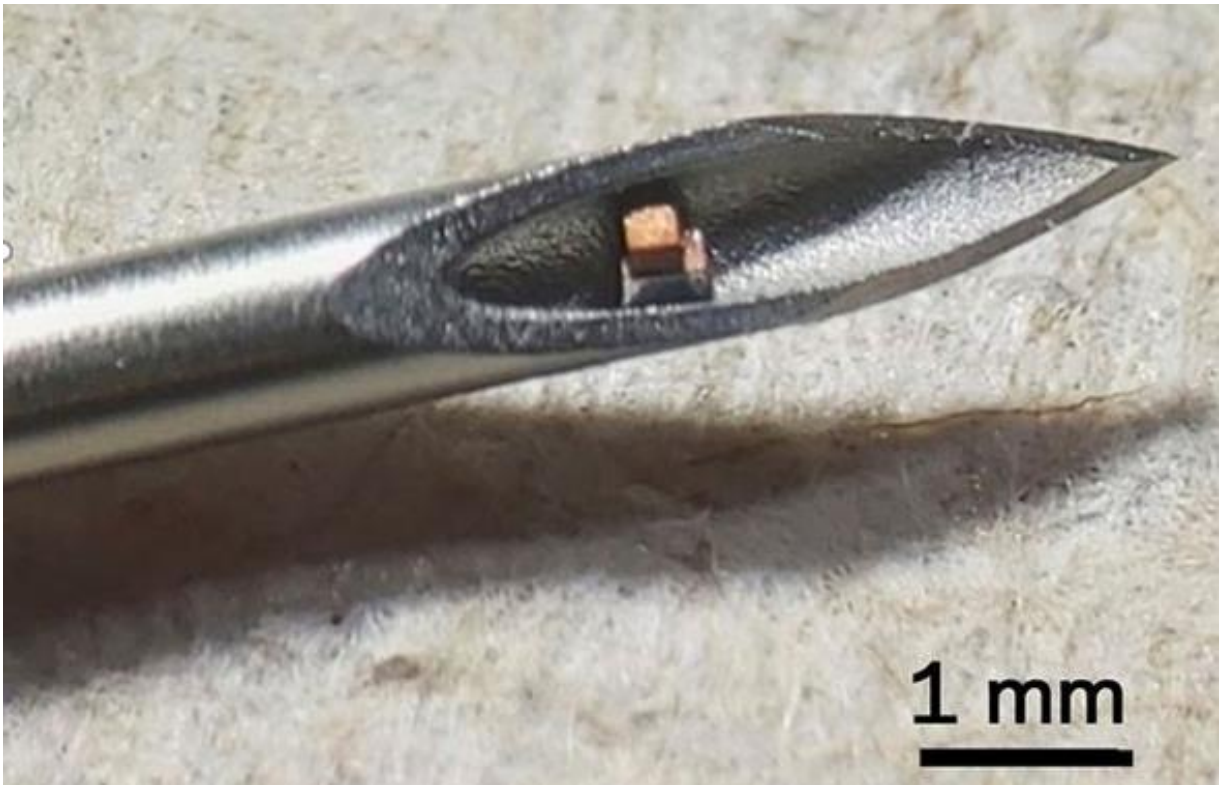
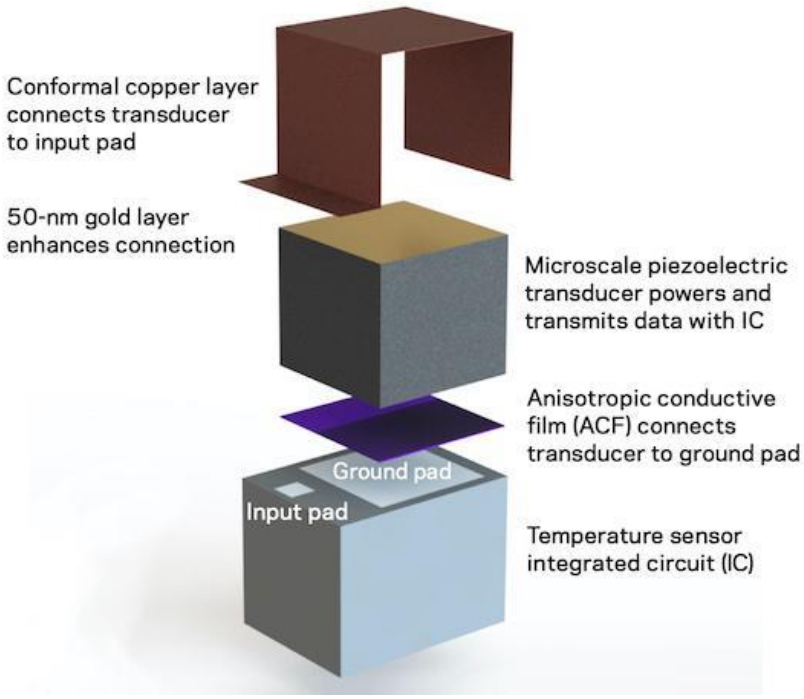


Image courtesy of Chen Shi/Columbia Engineering

Columbia Engineers develop the smallest single-chip system that is a complete functioning electronic circuit; implantable chips visible only in a microscope point the way to developing chips that can be injected into the body with a hypodermic needle to monitor medical conditions

May 12 2021 | By Holly Evarts | Image Credit: Chen Shi/Columbia Engineering

https://www.engineering.columbia.edu/press-releases/shepard-injectable-chips-monitor-body-processes



Schematic representation of the device.

New York, NY—May 12, 2021—Widely used to monitor and map biological signals, to support and enhance physiological functions, and to treat diseases, implantable medical devices are transforming healthcare and improving the quality of life for millions of people. Researchers are increasingly interested in designing wireless, miniaturized implantable medical devices for *in vivo* and *in situ* physiological monitoring. These devices could be used to monitor physiological conditions, such as temperature, blood pressure, glucose, and respiration for both diagnostic and therapeutic procedures.

To date, conventional implanted electronics have been highly volume-inefficient—they generally require multiple chips, packaging, wires, and external transducers, and batteries are often needed for energy storage. A constant trend in electronics has been tighter integration of electronic components, often moving more and more functions onto the integrated circuit itself.

Researchers at Columbia Engineering report that they have built what they say is the world's smallest single-chip system, consuming a total volume of less than 0.1 mm^3. The system is as small as a dust mite and visible only under a microscope. In order to achieve this, the team used ultrasound to both power and communicate with the device wirelessly. The study was published online May 7 in *Science Advances*.

“We wanted to see how far we could push the limits on how small a functioning chip we could make,” said the study’s leader Ken Shepard, Lau Family professor of electrical engineering and professor of biomedical engineering. “This is a new idea of ‘chip as system’—this is a chip that alone, with nothing else, is a complete functioning electronic system. This should be revolutionary for developing wireless, miniaturized implantable

medical devices that can sense different things, be used in clinical applications, and eventually approved for human use."

The team also included Elisa Konofagou, Robert and Margaret Hariri Professor of Biomedical engineering and professor of radiology, as well as Stephen A. Lee, PhD student in the Konofagou lab who assisted in the animal studies.

The design was done by doctoral student Chen Shi, who is the first author of the study. Shi's design is unique in its volumetric efficiency, the amount of function that is contained in a given amount of volume. Traditional RF communications links are not possible for a device this small because the wavelength of the electromagnetic wave is too large relative to the size of the device. Because the wavelengths for ultrasound are much smaller at a given frequency because the speed of sound is so much less than the speed of light, the team used ultrasound to both power and communicate with the device wirelessly. They fabricated the "antenna" for communicating and powering with ultrasound directly on top of the chip.

The chip, which is the entire implantable/injectable mote with no additional packaging, was fabricated at the Taiwan Semiconductor Manufacturing Company with additional process modifications performed in the Columbia Nano Initiative cleanroom and the City University of New York Advanced Science Research Center (ASRC) Nanofabrication Facility.

Shepard commented, "This is a nice example of 'more than Moore' technology—we introduced new materials onto standard complementary metal-oxide-semiconductor to provide new function. In this case, we added piezoelectric materials directly onto the integrated circuit to transducer acoustic energy to electrical energy."

Konofagou added, "Ultrasound is continuing to grow in clinical importance as new tools and techniques become available. This work continues this trend."

The team's goal is to develop chips that can be injected into the body with a hypodermic needle and then communicate back out of the body using ultrasound, providing information about something they measure locally. The current devices measure body temperature, but there are many more possibilities the team is working on.

###

Columbia Engineering

Columbia Engineering, based in New York City, is one of the top engineering schools in the U.S. and one of the oldest in the nation. Also known as The Fu Foundation School of Engineering and Applied Science, the School expands knowledge and advances technology through the pioneering research of its more than 220 faculty, while educating undergraduate and graduate students in a collaborative environment to become leaders informed by a firm foundation in engineering. The School's faculty are at the center of the University's cross-disciplinary research, contributing to the Data

Science Institute, Earth Institute, Zuckerman Mind Brain Behavior Institute, Precision Medicine Initiative, and the Columbia Nano Initiative. Guided by its strategic vision, "Columbia Engineering for Humanity," the School aims to translate ideas into innovations that foster a sustainable, healthy, secure, connected, and creative humanity.

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ABOUT THE STUDY

The study is titled "Application of a sub-0.1-mm3 implantable mote for in vivo real-time wireless temperature sensing."

Journal: Science Advances

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The study was supported in part by a grant from the W. M. Keck Foundation and by the Defense Advanced Research Projects Agency (DARPA) under Contract HR0011-15-2-0054 and Cooperative Agreement D20AC00004.

Chen Shi and Kenneth L. Shepard are listed as inventors on a provisional patent filed by Columbia University (Patent Application No. 15/911,973). The other authors declare no competing interests.