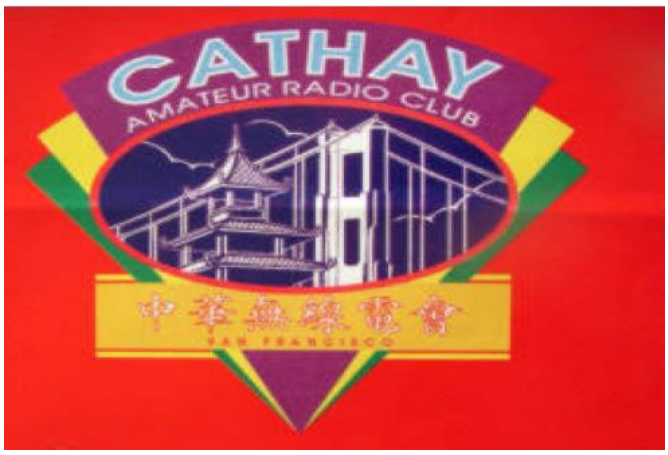


Cathay May 2025

www.cathayradio.org

President North: Leonard Tom, *NX6E* **email:**nx6e@sonic.net
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: Rodney Yee, *KJ6DZI* - **email:**rodyee2000@yahoo.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, As of 8/21/2023 we are switching over from using Repeater: WB6TCS to **Nick Cassarino's Repeater: WA6GEL UHF 444.800 Mhz, Offset +5 Mhz, CTCCS/Tone PL 179.9 Hz on Monument Peak, Milpitas.**

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

Message on Behalf of the President: Leonard Tom, *NX6E*

Hello CARC Members and Friends;

Many thanks to both Nick Cassarino for the use of repeater – WA6GEL for our CARC Monday Night Net.

Additional folks are needed to help out with conducting the CARC radio net on Monday nights. Please contact Ed Fong (edison_fong@hotmail.com) if you are interested.

SAVE THE DATE: Saturday June 28, 2025 is ARRL Field Day. Please join us for the annual ARRL CARC/ SARES Field Day and Dinner Event. See details at bottom of newsletter.

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

Introduction to Tech Section:

Metamaterials are artificially created structured materials to exhibit specific electromagnetic or acoustic properties not found in nature.

This allows for manipulation of light, sound, and other waves in ways that were previously impossible

For more details about the metamaterials, see the Tech Section of this newsletter.

CARC Final News Wrap Up

Chat sub s'em to all you CARC members! - Leonard Tom, *NX6E*

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 meetings 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 2025 are:

- May 20, 2025
- June 17, 2025
- July 15, 2025

Location of in person future ACS meetings are yet to be determined as the regular location is under reconstruction. 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).

https://sf-fire.org/nert/nert-calendar-meetings-trainings-events

Training Classes: see above website. TBD

+ Recertifications
TBD

***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 fora training class by contacting the ALERT Program Coordinator, marina.chacon@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 TBD

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

UC Berkeley Engineering

https://engineering.berkeley.edu/news/2025/01/new-electromagnetic-material-draws-inspiration-from-the-color-shifting-chameleon/

The chameleon is the inspiration behind a new and innovative electromagnetic material. (Photo by bayshev/iStock.com)

New electromagnetic material draws inspiration from the color-shifting chameleon

Applications include defense, wireless communications, energy and smart infrastructure

January 15, 2025 by Marni Ellery

Talk about inspo. The chameleon, a lizard known for its color-changing skin, is the inspiration behind a new electromagnetic material that could someday make vehicles and aircraft “invisible” to radar.

As reported today in the journal Science Advances, a team of UC Berkeley engineers has developed a tunable metamaterial microwave absorber that can switch between absorbing, transmitting or reflecting microwaves on demand by mimicking the chameleon’s color-changing mechanism.

“A key discovery was the ability to achieve both broadband absorption and high transmission in a single structure, offering adaptability in dynamic environments,” said Grace Gu, principal investigator of the study and assistant professor of mechanical engineering. “This flexibility has wide-ranging applications, from stealth technology to advanced communication systems and energy harvesting.”

According to Gu, creating materials that can efficiently absorb electromagnetic waves, like radar or microwaves, has been a longstanding technological challenge. “Existing materials typically have a ‘one-size-fits-all’ design,” she said. “They are fixed in their response after they’re made, which limits their use in dynamic environments where adaptability is crucial.”

Seeking to create a material that could dynamically change how it interacts with electromagnetic waves, the researchers took inspiration from the chameleon. The sticky-tongued reptile changes color by adjusting the spacing between photonic crystals in its skin to modulate light reflection.

Gu and her team worked to adapt a similar tuning mechanism to their metamaterial design. The result was a crisscross truss structure that can mechanically transform to control its electromagnetic properties. By collapsing or expanding — a synchronized movement enabled by the interlinked system of trusses — the metamaterial can vary its electromagnetic response from broadband absorption to transmission mode.

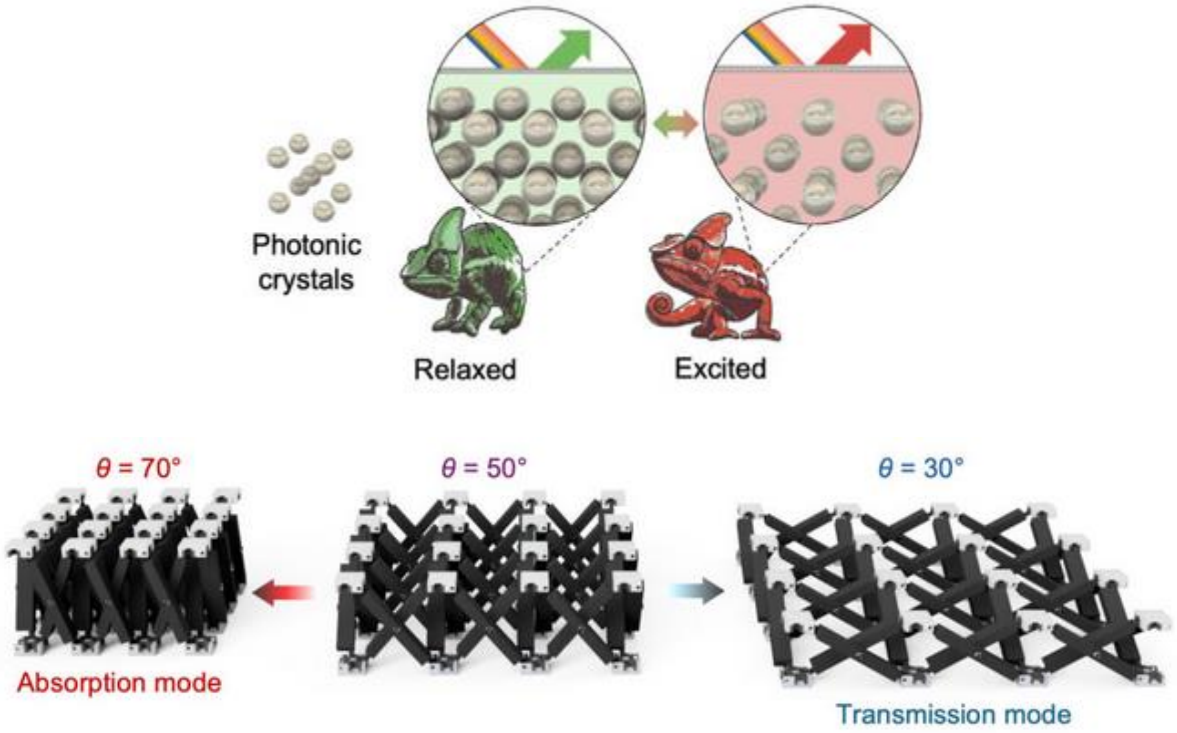


Image of the chameleon's color-changing mechanism (above) and the bioinspired tunable metamaterial microwave absorber (below). (Image courtesy of the researchers)

Using machine learning and genetic algorithms, the researchers optimized the structure's design for specific, targeted electromagnetic responses, achieving a level of programmability. They then fabricated the structure using 3D printing and tested its ability to switch between absorbing and transmitting microwaves.

"In its collapsed form, the structure absorbs over 90% of microwaves in the 4–18 GHz range, effectively rendering it invisible to radar and achieving stealth," said Daniel Lim, postdoctoral researcher and first author of the study. "When expanded, it allows up to 24.2% signal transmission, enabling communication when needed."

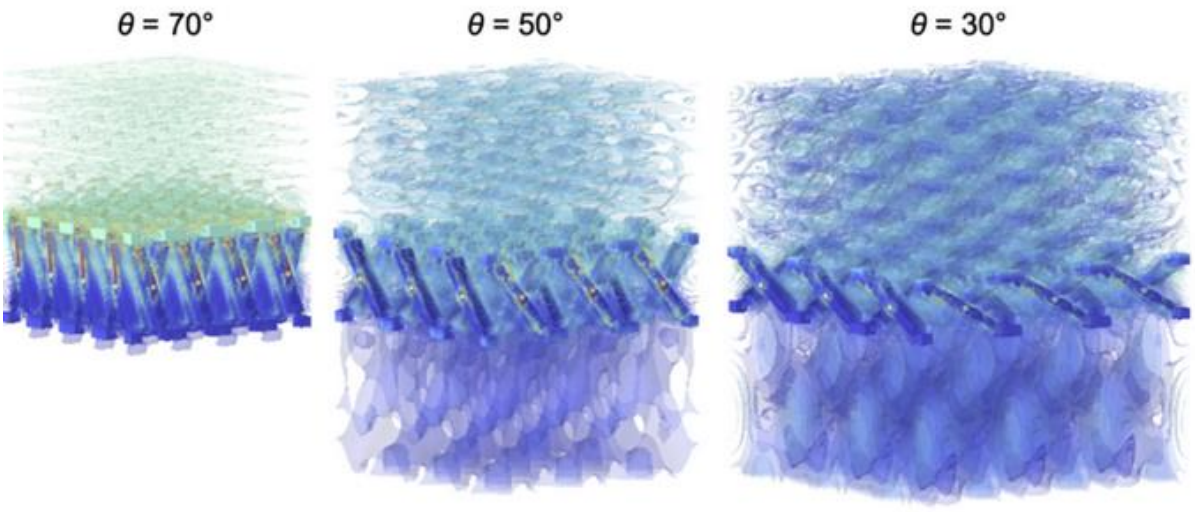


Diagram demonstrates tuning of electromagnetic waves (microwaves) through structural transformation of the metamaterial. (Image courtesy of the researchers)

According to Lim, this bioinspired electromagnetic material has the potential to enhance technologies in a broad range of fields, including defense, wireless communications, energy and smart infrastructure.

“In defense applications, this tunable metamaterial could be used to create vehicles or aircraft that become ‘invisible’ to radar when needed,” said Lim. “At the same time, it can allow communication signals to pass through when required, providing both stealth and connectivity in a single system.”

The material also could be used to create smart windows that switch between blocking and transmitting signals, improving privacy and communication security. In addition, Gu envisions it being used to improve the efficiency of electromagnetic energy harvesting systems that help power sensors and batteries.

“The tunable nature of the design allows it to adapt to changing needs, providing a versatile solution for electromagnetic wave management,” said Gu.

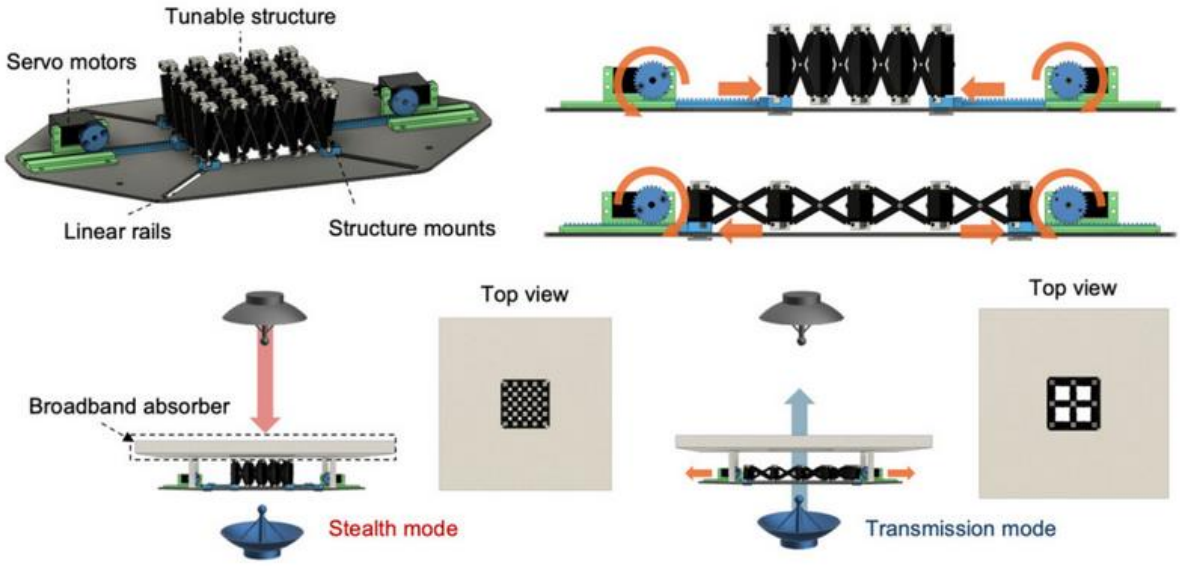


Illustration of the mechanical actuation and shifting electromagnetic response of the arrayed structure. (Image courtesy of the researchers)

Co-authors of this study include Alberto Ibarra and Jiyoung Jung from the Department of Mechanical Engineering at UC Berkeley, and Jeongwoo Lee and Wonjoon Choi from the School of Mechanical Engineering at Korea University, Seoul.

This research was supported by the Bakar Foundation, Alfred P. Sloan Foundation, National Science Foundation ACCESS supercomputing program and UC Berkeley's Molecular Graphics and Computation Facility.

<<< End of Technical Article >>>

The 2025 Annual CARC / SARES Picnic - ARRL Field Day

Cathay Amateur Radio Club – Sunnyvale Amateur Radio Emergency System

By Ed Fong

Date : Saturday June 28, 2025 – starting at 2 PM - dinner is at 4PM

Where: Fairbrae Swim & Racquet Club - 696 Sheraton Dr, Sunnyvale, CA 94087

Cost: **Free to all CARC / SARES Members, family and friends** - we ask you to bring a dessert, fruits (watermelon, oranges, apples, etc) and /or drinks.
Provided DINNER is free to all attendees.

Raffle tickets: - $5 each or 3 tickets for $10

RSVP: edison_fong@hotmail.com

ARRL Field Day is coming up this year. It will take place Saturday June 28, 2025. Mark your calendars. This is the Field Day to be at. Last year we had 85 registered attendees.

This year we have been very fortunate to reserve the very exclusive Fairbrae Swim and Tennis Club in Sunnyvale, CA. This venue was brought back by popular demand having previously hosted CARC/SARES Field Day events. This is a beautiful well-maintained private facility in the heart of Silicon Valley with easy driving access and plenty of parking. It has a half Olympic size swimming pool, two full size tennis courts, large picnic area, industrial kitchen and full-size dining hall, clean restrooms, and showers for use of both members and guests.

We have reserved the facility from 2 PM Saturday, June 28, 2025 through Sunday (at least till noon) June 29, 2025 for our CARC/SARES ARRL 2025 Field Day.

This year we will have a Chinese themed feast catered by First Wok Restaurant of Sunnyvale.

They have promised us a meal to remember with the follow dishes:

- Egg rolls for appetizer
- Vegetable Fried Rice,
- Mongolian beef
- Egg plant with Szechuan sauce
- String bean chicken.

Bring your entire family (or extended family) and friends to have a great day of socialization, great food, swimming, tennis, and of course HAM Radio.

Radios and antennas will be set up for HF and VHF the day before. Bring your own radio and feel free to plug it in and operate. This is a great opportunity to operate other radios and experience the look and feel of various manufacturers.

There will also be the traditional raffle, which will include but not limited to – the uSDX+ HF all mode transceiver, quad band mobile radio, antennas, etc.

Raffle tickets are $5 each => 3 for $10

A partial sample of raffle prizes are shown below:

1st Prize Lenovo – Thinkpad i5 processor with 8GB of memory and 256GB SSD

Windows 10 Pro operating system

14 inch screen - just perfect to carry around.

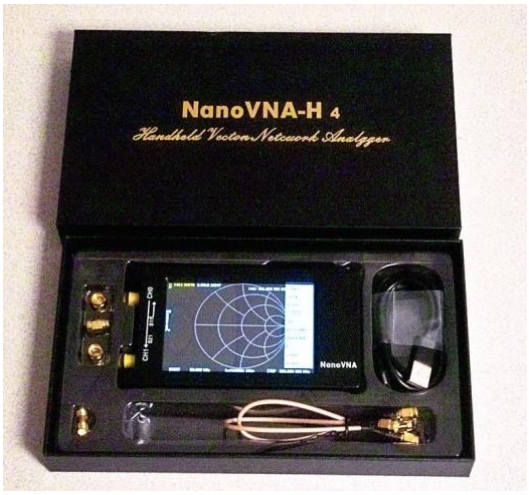
uSDX+ - QRP HF transceiver - Covers 80-6 meters – SSB, CW, digital QRP transceiver. 5 watts CW/SSB. Built in CW decoder, full DSP noise reduction. Complete with 4000 mAhr Li-on battery, AC adapter/charger, Speaker/microphone.

Radioddity QB25 (Quad Mobile 25 watt transceiver) 2 meters, 1.25 meter, 70cm

This radio boasts 200 memories, full software programmability, great bullet proof front end with 0.25 uV sensitivity, full FM broadcast radio, direct microphone key pad entry, and absolutely the best color display out there and more.

If you have been looking to get on 220 MHz, this is the latest and greatest. You will be a proud owner of one of this radio.

DSO03D12 120 MHz dual trace scope with probes - features a built in DVM and signal generator. Even has FFT mode mimic a spectrum analyzer. Every bench should have one.



Nano VNA - H4 - 4 inch 1.5 GHz VNA - Tuned antennas, duplexers, filters etc. Full touch screen. Latest version includes functions for TDR – time domain reflectometer.

Includes cables and full calibration kit.

Baofeng UV5R dual -band handie talkie

Drop in Lion smart charge, 1800 mAh Lion, battery, belt clip, antenna

Frequency coverage:

- 65-108 MHz – FM broadcast – receive only
- 136-174 MHZ – VHF – TX/RX
- 420- 520 - MHz - TX/RX

Mark your calendars – Saturday June 28, 2025, this is going to be a fun filled event.

See below pictures of the exclusive and well maintained Fairbrae Swim & Racquet Club in Sunnyvale, CA.

Half size Olympic swimming pool.

Lounge Area

Overhead shot of Tennis courts and Swimming Pool