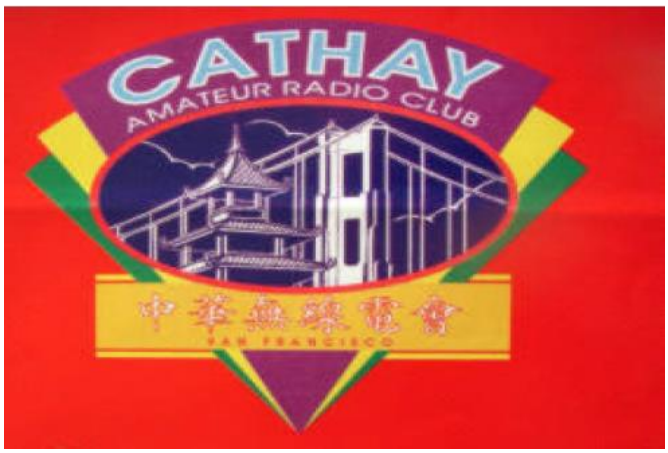

Cathay December 2025

www.cathayradio.org

President North: Leonard Tom, *NX6E* **email:**nx6e@sonic.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, 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. If you are in the North Bay, one can use the WA6GEL repeater North Bay located on Mt. San Bruno - 444.8 MHz offset +5 Mhz, CTCCS/Tone PL173.3 Hz**

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.

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:

One of the issues with solar / renewal emery is how to you store it for later use. The folks at MIT and Harvard have come up with a clever ideal of using concrete as an inexpensive and super capacitor to store electrical energy. Scientist at MIT have made a breakthrough discovery with making concrete to be able to store a lot more electrical energy.

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

Introduction to Special CARC Holiday Announcement

Esteemed CARC Member Ed Fong - WB6IQN is hosting his Annual Christ Party at his home on Saturday, December 13, 2023 from 6pm – 10pm.

Additional information is at the end of this newsletter. So save the date for a food filled fun event and meet your fellow HAMs.

Urgent Request from Ed Fong that needs action from our HAM community.

See details at bottom of newsletter about removing restrictions on HAMs ability to install antennas on private property / HOA.

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 / 2026 are:

- January 21, 2026
- February 18, 2026
- March 18, 2026

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

MIT News
ON CAMPUS AND AROUND THE WORLD

https://news.mit.edu/2025/concrete-battery-now-packs-ten-times-power-1001

Concrete “battery” developed at MIT now packs 10 times the power Improved carbon-cement supercapacitors could turn the concrete around us into massive energy storage systems.

Andrew Paul Laurent | Concrete Sustainability Hub

Publication Date:
October 1, 2025

An electron-conducting carbon concrete (ec³)-based arch structure integrates supercapacitor electrodes for dual functionality. The prototype demonstrates both structural load bearing and the ability to power an LED, with the light's intensity varying under applied load, highlighting the potential for real-time structural health monitoring via the supercapacitor.

Credits:Image: courtesy of the MIT EC³ Hub.

Concrete already builds our world, and now it's one step closer to powering it, too. Made by combining cement, water, ultra-fine carbon black (with nanoscale particles), and electrolytes, electron-conducting carbon concrete (ec^3, pronounced "e-c-cubed") creates a conductive "nanonetwork" inside concrete that could enable everyday structures like walls, sidewalks, and bridges to store and release electrical energy. In other words, the concrete around us could one day double as giant "batteries."

As MIT researchers report in a new *PNAS* paper, optimized electrolytes and manufacturing processes have increased the energy storage capacity of the latest ec^3 supercapacitors by an order of magnitude. In 2023, storing enough energy to meet the daily needs of the average home would have required about 45 cubic meters of ec^3, roughly the amount of concrete used in a typical basement. Now, with the improved electrolyte, that same task can be achieved with about 5 cubic meters, the volume of a typical basement wall.

"A key to the sustainability of concrete is the development of 'multifunctional concrete,' which integrates functionalities like this energy storage, self-healing, and carbon sequestration. Concrete is already the world's most-used construction material, so why not take advantage of that scale to create other benefits?" asks Admir Masic, lead author of the new study, MIT Electron-Conducting Carbon-Cement-Based Materials Hub (EC³ Hub) co-director, and associate professor of civil and environmental engineering (CEE) at MIT.

The improved energy density was made possible by a deeper understanding of how the nanocarbon black network inside ec^3 functions and interacts with electrolytes. Using focused ion beams for the sequential removal of thin layers of the ec^3 material, followed by high-resolution imaging of each slice with a scanning electron microscope (a technique called FIB-SEM tomography), the team across the EC³ Hub and MIT Concrete Sustainability Hub was able to reconstruct the conductive nanonetwork at the highest resolution yet. This approach allowed the team to discover that the network is essentially a fractal-like "web" that surrounds ec^3 pores, which is what allows the electrolyte to infiltrate and for current to flow through the system.

"Understanding how these materials 'assemble' themselves at the nanoscale is key to achieving these new functionalities," adds Masic.

Equipped with their new understanding of the nanonetwork, the team experimented with different electrolytes and their concentrations to see how they impacted energy storage density. As Damian Stefaniuk, first author and EC³ Hub research scientist, highlights, "we found that there is a wide range of electrolytes that could be viable candidates for ec^3. This even includes seawater, which could make this a good material for use in coastal and marine applications, perhaps as support structures for offshore wind farms.

At the same time, the team streamlined the way they added electrolytes to the mix. Rather than curing ec^3 electrodes and then soaking them in electrolyte, they added the electrolyte directly into the mixing water. Since electrolyte penetration was no longer a limitation, the team could cast thicker electrodes that stored more energy.

The team achieved the greatest performance when they switched to organic electrolytes, especially those that combined quaternary ammonium salts — found in everyday products like disinfectants — with acetonitrile, a clear, conductive liquid often used in industry. A cubic meter of this version of ec^3 — about the size of a refrigerator — can store over 2 kilowatt-hours of energy. That's about enough to power an actual refrigerator for a day.

While batteries maintain a higher energy density, ec^3 can in principle be incorporated directly into a wide range of architectural elements — from slabs and walls to domes and vaults — and last as long as the structure itself.

"The Ancient Romans made great advances in concrete construction. Massive structures like the Pantheon stand to this day without reinforcement. If we keep up their spirit of combining material science with architectural vision, we could be at the brink of a new architectural revolution with multifunctional concretes like ec^3," proposes Masic.

Taking inspiration from Roman architecture, the team built a miniature ec^3 arch to show how structural form and energy storage can work together. Operating at 9 volts, the arch supported its own weight and additional load while powering an LED light.

However, something unique happened when the load on the arch increased: the light flickered. This is likely due to the way stress impacts electrical contacts or the distribution of charges. "There may be a kind of self-monitoring capacity here. If we think of an ec^3 arch at architectural scale, its output may fluctuate when it's impacted by a stressor like high winds. We may be able to use this as a signal of when and to what extent a structure is stressed, or monitor its overall health in real time," envisions Masic.

The latest developments in ec³ technology bring it a step closer to real-world scalability. It's already been used to heat sidewalk slabs in Sapporo, Japan, due to its thermally conductive properties, representing a potential alternative to salting. "With these higher energy densities and demonstrated value across a broader application space, we now have a powerful and flexible tool that can help us address a wide range of persistent energy challenges," explains Stefaniuk. "One of our biggest motivations was to help enable the renewable energy transition. Solar power, for example, has come a long way

in terms of efficiency. However, it can only generate power when there's enough sunlight. So, the question becomes: How do you meet your energy needs at night, or on cloudy days?"

Franz-Josef Ulm, EC³ Hub co-director and CEE professor, continues the thread: "The answer is that you need a way to store and release energy. This has usually meant a battery, which often relies on scarce or harmful materials. We believe that ec^3 is a viable substitute, letting our buildings and infrastructure meet our energy storage needs." The team is working toward applications like parking spaces and roads that could charge electric vehicles, as well as homes that can operate fully off the grid.

"What excites us most is that we've taken a material as ancient as concrete and shown that it can do something entirely new," says James Weaver, a co-author on the paper who is an associate professor of design technology and materials science and engineering at Cornell University, as well as a former EC³ Hub researcher. "By combining modern nanoscience with an ancient building block of civilization, we're opening a door to infrastructure that doesn't just support our lives, it powers them."

< End of Tech Article >

Special CARC Holiday Announcement

Ed Fong's Annual Christmas Party – Saturday, December 13, 2025 6-10 PM

Where: 1163 Quince Ave. Sunnyvale, CA -

Format: Potluck – bring your favorite dish.

Door Prize - uSDX+ HF transceiver, 120 MHz dual trace oscilloscope, Nano VNA-4H and more– each attendees gets one raffle ticket for FREE. Tickets will not be sold. If you bring a friend or spouse, each one will get a raffle ticket - FREE

Best directions given on www.googlemaps.com Call if you get lost 408-245-8210

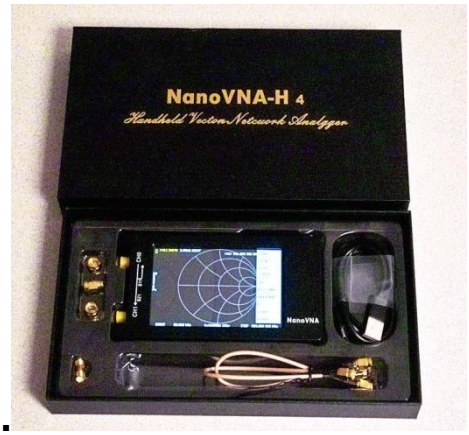
There is no excuse not to attend. Not only that, it is FREE to all attendees. Just bring a dish to share. If you have ever been to our Cathay Radio Christmas Party, you know this is the event to taste foods from all over the world. Does not matter whether you like – barbecue ribs, salads, seafood, Chinese, Mexican, Italian, Korean, it will be there. All kinds of desserts served at the dessert table. Get ready to eat your heart out and meet new friends as well.

Just some of the food at previous year's event.

Get a chance to meet some really cool folks that are movers and shakers in the Silicon Valley. Dr. Steven Stearns, Keith Synder, Ron Quan, Nick Cassarino, Jim Walker.

Rules for the raffle - Every attendee will receive one raffle ticket - no charge at the door. This will make you eligible for the grand prize and raffle. This is our way of saying thank you for your support during the year at the events we have held.

DSO03D12 120 MHz dual trace scope with probes - features a built in DVM , Signal generator, and FFT spectrum analyzer.



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.

uSDX+ - QRP HF transceiver - Covers 160-6 meters – SSB, CW, digital QRP transceiver. 5 watts CW – 10 watt SSB. Built in CW decoder, full DSP noise reduction. Complete with 4000 MaH LiOn battery, AC adapter/charger, Speaker/microphone

Radtel RT-860 1024 channel 2 mt, 1.25mt, 70 cm transceiver- full HF all mode receiver - All local repeaters VHF/UHF and 220 MHz have been programmed in. Includes whip antenna for SW reception

Tx/Rx 136 MHz-174 MHz full power
220-225 MHz reduced power
400-480 MHz full power

Rec only - 18-520 MHz AM/FM (includes aircraft and broadcast)
SW 2 -30 MHz (AM, SSB, CW) includes BW selection 500 Hz -4KHz
MW – AM 520-1720 KHz
LW - 153-279 KHz

Mil spec - 800 lumen aircraft aluminum LED flashlight with 18650 3000mAh battery and AAA battery adapter.

Urgent Message from Edison Fong

Date: December 1, 2025

ARRL has launched a nationwide grassroots campaign aimed at securing the passage of federal legislation that would grant Amateur Radio Operators the same rights to install antennas on their property as those enjoyed by users of TV antennas, wireless internet, and flagpoles.

The campaign, announced in an ARRL Member Bulletin on September 17, 2025, follows the reintroduction of the *Amateur Radio Emergency Preparedness Act* in February 2025 (see ARRL News 02/07/2025). The bipartisan bills -- H.R.1094 in the House and S.459 in the Senate -- are designed to prevent restrictive homeowners' association (HOA) rules that currently prohibit or severely limit the installation of amateur radio antennas, even when such antennas are hidden in trees, placed in attics, mounted on vehicles, or look like flagpoles.

"This legislation is about restoring equal rights to licensed Amateur Radio operators," said ARRL President Rick Roderick. "These restrictions hinder not only the enjoyment of Amateur Radio, but also its vital role in emergency communication during disasters."

Public Support Needed for Passage

To advance the legislation, ARRL is calling on its members and all licensees of the US Amateur Radio Service to take action by sending letters to their congressional representatives. Through a dedicated online tool at https://send-a-letter.org/hoa/, hams can easily generate and submit pre-drafted letters with a few clicks.
Go to — https://send-a-letter.org/hoa/

— and help us by sending your letters to your Representative and Senators. ARRL has emphasized that every letter matters. Your Representative and Senators need to know that the passage of this legislation is important to you.

Send Your Letters Now

Go to — https://send-a-letter.org/hoa/
— and help us by sending your letters to your Representative and Senators.

This is really important and really easy to use. I did it in less than 2 minutes. Just go to the website, enter you call sign and it does the rest.