

Palo Alto Colloquia

LOCKHEED MARTIN 

Thursdays 4:15 p.m., Bldg 202 Auditorium

4:00 p.m. Refreshments

Visitors Welcome

For information, please visit the internal

Palo Alto Colloquia page on the ATC website:

<https://space-us.external.lmco.com/sites/atc/Pages/Colloquia.aspx>

Colloquia presentations are available on your desktop through

Microsoft Lync. To join online meeting:

<https://meet.global.lmco.com/stuart.mchugh/76HJGDY3>

Audio: AT&T Conference call: 408-742-3800, Pin 729281#

For further information, call:

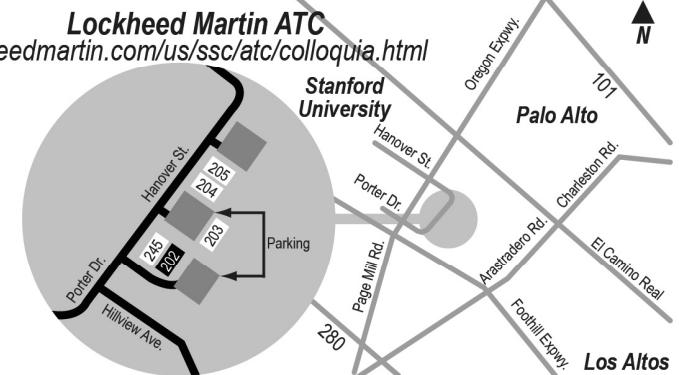
Dr. Gary Bush 650-424-2267

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Advanced Technology Center (ATC)

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external link:
<http://www.lockheedmartin.com/us/ssc/atc/colloquia.html>



May 22, 2014

OCEAN ACIDIFICATION (THE MOST DANGEROUS SECRET) AND ITS REMEDIATION

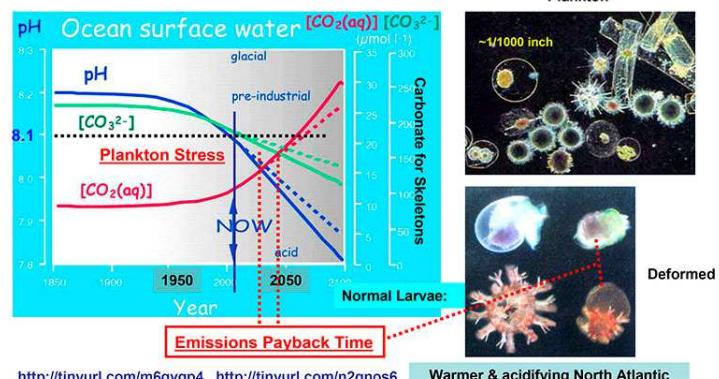
Dr. Alexander Cannara, Cannara Consulting

Ocean acidification is a consequence of the Industrial Age's emissions of CO₂, which gradually dissolves in seas, forming carbonic acid. Sea life performs the net carbon sequestration for the planet via calcifying organisms that build shells or skeletons from the calcium carbonate ions in seawater. When these organisms die, they sink, taking their carbonate parts to the seafloor, where limestone is continually forming. That sequesters carbon from air and sea sources until the limestone is subducted into deep volcanic systems.

Unfortunately, human CO₂ emissions have become 1500 times what the sea-life cycle can handle each year. As a result, oceans have become less alkaline and will, before 2050, reach pH values below which sea life can no longer extract carbonate ions. They thus die, killing both their carbon sequestration and food chains serving ~20% of all human food protein on the planet. Only advanced, clean sources of high-temperature heat can prevent this occurrence before 2050, and those sources are only available in sufficient power via advanced nuclear systems.

Dr. Alexander Cannara is an electrical engineer, software and networking consultant, and an educator. He spent 25 years in computer networking, 12 of those managing, developing, and delivering technical training. He has taught courses in engineering, statistics, programming, and networking at Stanford, USF, International Technological University, and Golden Gate and Silicon Valley Universities. Alex has worked with local and national groups on energy and climate issues and on safe nuclear power. Dr. Cannara holds a Ph.D. from Stanford University in Mathematical Methods in Educational Research and MS degrees in both EE and Statistics. He is married with three children and resides in Menlo Park, CA.

~25% of past CO₂ emissions (>500Gt Carbon) are now acidifying oceans, preventing organism growth & damaging entire sea food chains, which provides ~20% of human food protein... <http://tinyurl.com/kobuytd> (oysters)
<http://www.ocean-acidification.net/FAQeco.html>
<http://cen.acs.org/articles/91/i12/Acidic-Ocean-Hits-Pacific-Northwest.html>



<http://tinyurl.com/m6gvgp4> <http://tinyurl.com/n2qnos6>

Warmer & acidifying North Atlantic

More Colloquia

May 29 THE INVENTION OF SPECTROSCOPY, THE ERA OF BIG REFRACTORS, AND THE ASCENDENCY OF REFLECTING TELESCOPES
IN THE 19TH CENTURY – Dr. Kenneth Lum

June 05 SOLVING REAL-WORLD APPLICATIONS WITH THE NASA-GOOGLE-USRA QUANTUM-COMPUTING DEVICE –
Dr. Alejandro Perdomo-Ortiz, NASA Ames

June 12 SUMMER BREAK – Series starts again in mid- to late September 2014

To sign up for our mailing list, contact stuart.mchugh@lmco.com. Posted by Leah Molinari-Jones, 408-743-1458, 05/15/14–05/22/14