Our Speaker Albert Liang received his B.S. degree in structural engineering from UC San Diego in 2016. He is currently pursuing a Ph.D. degree with the Department of Structural Engineering at UC San Diego under the guidance of Professor Francesco Lanza di Scalea. Furthermore, he is currently working part-time at Space Exploration Technologies and assisting with NDE related projects. His current research interest includes nondestructive evaluation with focus in passive sensing, ultrasonic imaging, and signal processing.

Topic Title: “3D Ultrasonic Imaging of Structures Using SAFT and Wave Compounding with Application to Rail Inspections”.

Abstract: Imaging of internal flaws is an important task needed to verify structural integrity and safety. Various applications of ultrasonic imaging require transducer wedges (or in general a transducer-medium coupling path) to impart specific directionality to the ultrasonic beam, in order to maximize the reflection of the wave from internal discontinuities. For example, to detect Transverse Defects (TDs) in railroad tracks, due to their orientation, transducer wedges are required. This is because the ultrasonic array alone cannot guarantee sufficient reflection of the wave from TDs, thus making the imaging process extremely challenging. In this work, the Synthetic Aperture Focus (SAF) technique is used to send and receive the ultrasonic waves in the medium. The final image of the internal flaws is then obtained by back propagating the recorded waveforms using the Delay-Multiply-and-Sum (DMAS) algorithm that accounts for the refraction of the waves at the interface between the wedge and solid medium. The final image of the internal flaws is then obtained by back propagating the recorded waveforms using the Delay-Multiply-and-Sum (DMAS) algorithm that accounts for the refraction of the waves at the interface between the wedge and solid medium. Lastly, wave mode compounding can be performed to further increase image contrast by exploiting longitudinal and shear waves propagating in the imaging medium. Validating experiments with 2D and 3D ultrasonic images are presented for rail specimens with simulated and natural internal flaws.

### Meeting Details

**Tuesday, September 3rd, 2019**

- **Social time**: 5:00-6:00 PM
- **Dinner**: 6:00-7:00 PM
- **Presentation begins**: 7:00 PM in the “Lord Jim Room” of the Best Western Seven Seas’ Restaurant.
- **BOD Meeting**: 8:00-8:45 PM

**411 Hotel Circle S, San Diego, 92108**

**Meals to include:** Green Salad, rolls served in baskets, Dessert, Coffee, Decaf, Hot or Iced Tea.

The meal choices for the September 3rd meeting are:
- **Salisbury Steak** w/ Mashed Potatoes and vegetables
- **Grilled Salmon** w/rice pilaf and vegetables should you have special dietary needs
- Vegan or Vegetarian Plate is available on request prior to meeting date.

Please RSVP by the end of business August 30th, 2019, the Friday preceding the meeting with your intent to attend and meal choice.

On the email below:

sd-asnt@cox.net

www.bw7seas.com

Meeting Attendance at presentation only is no cost

**Meeting Dinner Cost:**
- San Diego Section ASNT Student Member, Military, Lifetime and Retired Members: $10.00
- ASNT Members and Guests: $25.00

Credit Cards accepted with a Processing Fee.

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San Diego Section of the American Society for Non-Destructive Testing, Inc.

**Website:**

www.sd-asnt.org

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**NEWSLETTER**

Vol. 9, Issue 1  July-August 2019

**Mr. Albert Liang is the Speaker for September 3rd, 2019**

**Year End Cash Raffle $250.00**

will be drawn at the **May 5th, 2020 Meeting**. When you purchase a dinner you will receive a raffle ticket. The more meetings you attend the more possible tickets you will have to be entered into the drawing.

**You must be present at the MAY 5th, 2020 MEETING to win.**
As the incoming Chairman of the American Society of Non-Destructive Testing, San Diego Section Board of Directors, I am incredibly honored and excited to represent such a thriving and economically important industry in our City. As someone who has spent my entire career in San Diego, working in this field, I am humbled to be able to represent such a fine Board.

I can tell you that our industry is something very special in this city. We are so fortunate to have such a broad array of industries represented in the region, from Aerospace, Commercial, Medical, Military and Water Districts to name a few.

As Vice President of Testing Services & Inspection, Inc., a local materials testing laboratory, I have grown to learn the importance of performing “quality assurance” on behalf of your customer. I have been fortunate to come across others in this field who exemplify the very best of our profession’s values and to witness caring individuals that perform high quality work, which is a true testament to the commitment of each and every person who works in our industry.

Please know, I am all ears as it pertains to insight and feedback related to NDT in Americas Finest City. I want to hear from you about the good, the bad and the ugly. Tell me what’s important to you so that I can better serve your interests. To be effective, we need an engaged membership whose priorities are aligned and representative of the entire industry.

There is so much good within our industry in spite of the difficulties we, at times, may face. It is up to us as a culture, to provide guidance to up and coming Technicians, striving to make a name for themselves in this industry.

I would like to thank my Father and former Chairman, Mr. Juan R. Diaz, for getting me involved in this industry, fostering a deep enjoyment for this type of work, and a relentless drive to keep learning more. I am truly grateful for his continued support.

So, as I begin this incredible journey representing you, our valuable and respected members, please know that I pledge to do my very best to ensure that all of our collective interests are well represented. If you’re already involved, stay involved. If you haven’t had the time, please make time. Get your peers involved. This is important and together, we can ensure that our industry remains vibrant, celebrated and important in our beautiful city.

Respectfully,

Chairman Michael Diaz—San Diego Section of ASNT
2019-2020 Technical / Administrative Program

San Diego Section of the
American Society for NDT, Inc.

2019:

September 3rd: Albert Liang, “3D Ultrasonic Imaging of Structures Using SAFT and Wave Com- pounding with Application to Rail”.

October 1st: Randy Jones, .


November 18th—21st, 2019 ASNT Annual Conference 2019 - Westgate Las Vegas Resort and Casino / Las Vegas, Nevada

December 3rd: (Speaker tba) -Christmas Event-
Spouse / Companion / Guest night: All spouses (significant others) will have dinner provided by the section. Each person in attendance to bring a wrapped white elephant gift ($10.00 - $15.00)

2020:

January 7th: (Dark-No Meeting)

February 4th: “Past Chairman’s Night”, David Mitchell

March 3rd: Michael Mc Gloin


April 7th: Mark Bell

May 5th: “Annual Science Fair Awards” (NDT-related projects).

June (TBA) : Michael Diaz, Change of Gavel
2019 - 2020 NDT Educational Opportunities

We have posted a list of potential training courses for the 2019-2020 year (August through June).

Please contact Education Chair - Gary Bass with your requests, which he will attempt to accommodate if we obtain sufficient volunteer instructors for Saturday lectures. Please note instructors are not paid; however, they get recertification points if they hold ASNT/ACCP Level III.

Contact: Education Chairman Gary Bass
Email: gbchulavista@AOL.com
Phone - 619-794-6118 mobile

Chairman Michael Diaz
Email - mike.diaz05@gmail.com
Phone 619-890-4134 mobile

BOD - sd-asnt@cox.net  BOD contact # 619-444-2319

To promote the general advancement of the [NDT] industry;
- To educate the public in the area of nondestructive testing;
- To provide a forum for exchange of [NDT] technical information;
- To facilitate training, education and research in the [NDT] field;
- To engage in any and all lawful activities incidental to the foregoing purposes except as restricted herein.

Level I & Level II courses satisfy the requirements of SNT-TC-1A/NAS-410. Non-member fees (which includes a one-year ASNT membership). 24, 32, and 40-hour courses: held Saturdays, 8:00 to 5:00 unless facility or instructor availability are different.

- Visual/Dimensional Level I / Level II (24hrs)
- VT (24hrs) Members: $425  Non-member: $500
- Liquid Penetrant Level I / II (32 hrs)
- PT - I / II (32 hrs) Members: $750  Non-member: $825
- Magnetic Particle Level I / II (32 hrs)
- MT - I / II (32 hrs) Members: $750  Non-member: $825
- Ultrasonic Level I (40 hrs)
- UT - I (40hrs) Members: $600  Non-member: $675
- Ultrasonic Level II (40 hrs)
- UT - II (40hrs) Members: $600  Non-member: $675
- Radiography Level I (40 hrs)
- RT - I (40hrs) Members: $600  Non-member: $675
- Radiography Level II (40 hrs)
- RT - II (40hrs) Members: $600  Non-member: $675

Credit Cards accepted with a Processing Fee.
Past—Chairman’s Message

Past Chairman’s Message coming soon......
The Section is looking for your nomination(s) for individuals who may meet any of the following:

**Lou DiValerio Technician of the Year Award**

The Lou DiValerio Technician of the Year Award acknowledges those ASNT members who are deserving technicians, to encourage their continued participation in the Society. Nominees for the award must hold a position of employment that corresponds to general guidelines similar to those described by Recommended Practice No. SNT-TC-1A for defining the primary duties and responsibilities of Level I and Level II technicians.

**Fellow of ASNT**

A Fellow of ASNT is an individual member of the Society who has 15 years NDT professional experience; 10 years ASNT membership and has supported the Society through contributions and participation at the local and/or national level. A Fellow must have demonstrated outstanding professional distinction, and must have made continued significant contributions to the advancement of NDT in areas such as management, engineering, science, education, administration or planning.

**Mentoring Award**

The Award for Outstanding Mentor was established to recognize those people in the Society working to encourage others to reach goals they may have otherwise not sought, and to offer the rest of the membership an example of what they could be accomplishing by acting as mentors.

**Award for the Advancement of Active Military and Veterans in NDT**

The Award for the Advancement of Active Military and Veterans in NDT recognizes individuals or organizations who encourages Active Military and Veterans to enter and thrive in the field of NDT, either through creation and/or implementation of programs that provide educational or career advancement opportunities in NDT that may not otherwise be available to Active Military and Veterans or through leading by example of how Active Military and Veterans can not only have a career in NDT but also contribute greatly to NDT, ASNT, and to creating a safer world.

**Award for the Advancement of Women in NDT**

The Award for the Advancement of Women in NDT recognizes individuals or organizations who encourage women to enter and thrive in the field of NDT, either through creation and/or implementation of programs that provide educational and/or career advancement opportunities in NDT that may not otherwise be available to women or through leading by example of how women can not only have a career in NDT but also contribute greatly to NDT, ASNT, and to creating a safer world.

Contact the Awards Committee Chair: Larry Olsen or any San Diego Section BOD member for further information on how to nominate any individual. Nominations must be sent to ASNT Headquarters and postmarked by 1 February 2020.

**Please note:** All nominees must be sponsored by an ASNT Section, ASNT Council or ASNT National Committee. ASNT’s goal is to recognize the individual member who has taken the NDT/NDT career path and is dedicated to making the world a safer place. Please help to encourage our young ASNT members by nominating someone!
**HD-CR 35 NDT** Computed Radiography System

**THE BEST CR-RESOLUTION!**

- **Intuitive handling**
  Easy transition from film
- **DICONDE • ISO • ASTM**
  Compliant to all relevant standards
- **Unique 30 µm SRe**
  Certified Basic Spatial Resolution
- **Lightweight and rugged**
  Only 38.6 lbs system weight

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No matter what type of radiographic testing, the unique TreFoc technology of the HD-CR 35 NDT imaging plate scanner always guarantees the highest image quality. And with the intuitive and powerful D-Test software, you benefit from an optimal and time-saving workflow. Arrange a free demonstration and convince yourself.

**Digital Intelligence – Ready to Change.**

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[562-946-4242](tel:+15629464242)
**NDT Training, Scheduled courses for January – December 2019**

**Greatly Expanded Schedule of Classes for 2019**
We will be Scheduling **WEEKEND TRAINING COURSE** please contact Cathy for dates

### NDT Level I and II Courses

<table>
<thead>
<tr>
<th>Test</th>
<th>Date</th>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic Particle Level I/II SNT-TC-1A</td>
<td>February 4-6, April 1-3, June 3-5, August 5-7, October 7-9, December 2-4</td>
<td>24 hours</td>
<td>$845</td>
</tr>
<tr>
<td>Penetrant Level I/II SNT-TC-1A</td>
<td>February 7-8, April 4-5, June 6-7, August 8-9, October 10-11, December 5-6</td>
<td>16 hours</td>
<td>$695</td>
</tr>
<tr>
<td>Ultrasonic Testing Level I</td>
<td>January 11-15, April 8-12, June 10-14, August 12-16, October 15-18, December 9-13</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Ultrasonic Testing Level II</td>
<td>February 18-22, April 15-19, June 17-21, August 19-22, October 21-25, December 16-20</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Radiation Safety (IRRSP Preparation)</td>
<td>January 7-11, April 22-26, August 26-30</td>
<td>40 hours</td>
<td>$1295 (Approved by State of CA)</td>
</tr>
<tr>
<td>Radiography Testing Level I</td>
<td>January 14-18, April 29-May 3, September 9-13</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Radiography Testing Level II</td>
<td>January 21-25, May 6-10, September 16-20</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Film Interpretation</td>
<td>January 28-February 1, May 13-17, September 23-27</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Eddy Current Testing Level I</td>
<td>March 18-22, July 15-19</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Eddy Current Testing Level II</td>
<td>March 25-29, July 22-26</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
</tbody>
</table>

### Phased Array Training

These are Level I and II UT PA courses to meet the SNT-TC-1A (2011) certification requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Phased Array</td>
<td>16 hours</td>
<td>$1195</td>
</tr>
<tr>
<td>March 4-5, October 28-29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic Phased Array Level I (SNT-TC-1A)</td>
<td>40 hours</td>
<td>$1995</td>
</tr>
<tr>
<td>March 4-8, October 28-November 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic Phased Array Level II (SNT-TC-1A)</td>
<td>40 hours</td>
<td>$1995</td>
</tr>
<tr>
<td>March 11-16, November 4-8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Ultrasonic Phased Array Composite Inspection

**New for 2019** (40 hours) $1995
July 8-12, November 12-15

### Back for 2019, Scheduled, ASNT NDT Level III Examination, Refresher Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Level III</td>
<td>Includes text book package worth over $300 (40 hours)</td>
<td>$1395</td>
</tr>
<tr>
<td>Feb 25-March 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eddy Current Level III</td>
<td>24 hours</td>
<td>$995</td>
</tr>
<tr>
<td>July 29-August 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Testing Level III</td>
<td>15 hours</td>
<td>$795</td>
</tr>
<tr>
<td>September 4-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetic Particle Level III</td>
<td>16 hours</td>
<td>$795</td>
</tr>
<tr>
<td>May 20-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penetrant Level III</td>
<td>16 hours</td>
<td>$795</td>
</tr>
<tr>
<td>May 22-23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiography Level III</td>
<td>24 hours</td>
<td>$995</td>
</tr>
<tr>
<td>May 28-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultrasonic Level III</td>
<td>40 hours</td>
<td>$1395</td>
</tr>
<tr>
<td>June 24-26</td>
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</tbody>
</table>

### Additional “Ad Hoc” NDT Training Courses

Please call for dates for the below courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic Particle Level II NAS 410</td>
<td>32 hours</td>
<td>$1195</td>
</tr>
<tr>
<td>Penetrant Testing Level II NAS 410</td>
<td>32 hours</td>
<td>$1195</td>
</tr>
<tr>
<td>Ultrasonic Thickness Testing</td>
<td>40 hours</td>
<td>$1295</td>
</tr>
<tr>
<td>Digital Radiography Testing</td>
<td>40 hours</td>
<td>$1995</td>
</tr>
<tr>
<td>Eddy Current Array Aerospace</td>
<td>40 hours</td>
<td>$1996</td>
</tr>
</tbody>
</table>

### Back for 2019

**CWI Examination Preparation Course** (40 hours) $1595
Note: This will be scheduled over 4 (10 Hour) Saturdays.

Qualification Examinations prepared, and administered, procedures written, level III outside agency services and contracts available.

Any of our courses can also be held at your facility just for your staff. Call for details

OUR POLICY IS NOT TO CANCEL COURSES IF YOU ENROLL & PAY 2 WEEKS IN ADVANCE

For questions or to enroll contact us at [www.testndt.com](http://www.testndt.com), email ndttrain@aol.com, Ph (714) 255-1500