



**HEALTHCARE  
PACKAGING  
CONSORTIUM**  
AT CHRISTIAN BROTHERS UNIVERSITY

# 2018 HPC FALL MEETING

Friday, November 30, 2018

Montesi Room, Buckman Hall

Christian Brothers University





## HEALTHCARE PACKAGING CONSORTIUM

### 2018 HPC Fall Meeting

Friday, November 30, 2018

Montesi Room, Buckman Hall, Christian Brothers University  
650 East Parkway South, Memphis, TN 38104

8:30 a.m. – 8:50 a.m.	<ul style="list-style-type: none"> <li>• <b>Check-in/Continental Breakfast</b></li> </ul>
8:50 a.m. – 9:00 a.m.	<ul style="list-style-type: none"> <li>• <b>Welcome</b> <i>Siripong Malasri</i> Christian Brothers University</li> </ul>
9:00 am – 10:00 am	<ul style="list-style-type: none"> <li>• <b>Distribution Dynamic Measurements Driving Package Testing That’s Closer to Reality</b> <i>Eric Joneson</i> Lansmont</li> </ul>
10:00 a.m. – 11:00 p.m.	<ul style="list-style-type: none"> <li>• <b>Multi-Axis Simulation of Vibration during Transportation by Truck</b> <i>Tagore Somers &amp; Jeff Chida</i> Eli Lilly</li> </ul>
11:00 – 11:15	<ul style="list-style-type: none"> <li>• <b>Coffee Break</b></li> </ul>
11:15 – 12:15	<ul style="list-style-type: none"> <li>• <b>Hot Sun / Cold Storage</b> <i>Nicole Smith &amp; Michael Goodwyn</i> Aldelano</li> </ul>
12:15 p.m. – 1:30 p.m.	<ul style="list-style-type: none"> <li>• <b>Lunch &amp; Networking</b></li> <li>• <b>Optional Lab Tour</b> <i>Larry Rutledge</i> CBU ISTA Certified Packaging Lab</li> </ul>
1:30 p.m. – 2:30 p.m.	<ul style="list-style-type: none"> <li>• <b>Life is a Box of Chocolates</b> <i>Phillip Ashley Rix, President</i> Phillip Ashley Chocolates</li> </ul>
2:30 p.m. – 2:40 p.m.	<ul style="list-style-type: none"> <li>• <b>Refreshment Break</b></li> </ul>
2:40 p.m. – 3:40 p.m.	<ul style="list-style-type: none"> <li>• <b>Optimum Corner Offset for Diagonal-Corner Cubical Boxes</b> <i>Siripong Malasri, Jade Housewirth, Deliya Duckworth, Conrado Jimenez, Britney Payne, and Yuliana Luna</i></li> <li>• <b>Non-Interlocking vs Interlocking Arrangements of Multi-Pack Water Bottles under Semi-Confinement Condition</b> <i>Siripong Malasri, Deliya Duckworth, Jade Housewirth, Britney Payne, and Conrado Jimenez</i></li> <li>• <b>Properties of Corrugated Fiberboard and Box</b> <i>Siripong Malasri, Deliya Duckworth, Alandria Waller, Vanessa Cervantes, and Daniel Gamez</i> Christian Brothers University</li> </ul>

Campus Map: <http://www.cbu.edu/assets/2091/cbumap2017.pdf>

#### Active Members

*Eetbe, Evergreen Packaging, Fairway Biomed, FedEx, International Paper, Medtronic, Memphis Bioworks, MicroPort Orthopedics, Olympus Surgical Technologies America, Restore Medical Solutions, Smith & Nephew, SweetBio, Thaddeus Medical Systems, Wright Medical*

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## *Active Members*

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## Registered Participants

1. Aguilar, Eduardo	Christian Brothers University
2. Atkinson, Dennis	BattTrans
3. Baynham, Corey	LG Electronics
4. Bonner, April	Smith & Nephew
5. Breault, Jim	Lansmont
6. Chida, Jeff	Eli Lilly
7. Choudhary, Divya	Christian Brothers University
8. Deas, Jimmy	International Paper
9. Fleming, Scott	Fleming Architects
10. Gamez, Daniel	Christian Brothers University
11. Gilman, Jay	FedEx
12. Goodwyn, Michael	Aldelano
13. Hauer, Matthew	Christian Brothers University
14. Haught, Paul	Christian Brothers University
15. Housewirth, Jade	Christian Brothers University
16. Johns, Georgina	Christian Brothers University
17. Joneson, Eric	Lansmont
18. Jordan, Brianna	Christian Brothers University
19. June, Sean	Christian Brothers University
20. Lemmonds, Elizabeth	EpiCenter
21. Luna, Yuliana	Christian Brothers University
22. Lynch, Cliff	Epicenter
23. Malasri, Pong	Christian Brothers University
24. Melo Escobedo, Jean	Christian Brothers University
25. Moats, Bob	Christian Brothers University
26. Moritz, Brad	Thaddeus Medical Systems
27. Nair, Manu	eLogistiks
28. Nobes, Geoff	Evergreen Packaging
29. Ostrowski, Michael	Smith & Nephew
30. Payne, Christopher	Christian Brothers University
31. Podesta, Thomas	Christian Brothers University
32. Redburn, Tamara	Fleming Architects
33. Rix, Phillip Ashley	Phillip Ashley Chocolates
34. Rodriguez, Isaac	SweetBio
35. Rutledge, Larry	CBU ISTA Certified Packaging Lab
36. Ryne, Stevens	Smith & Nephew
37. Samaniego-Mata, Cesar	Christian Brothers University
38. Scully, Steve	Thaddeus Medical Systems
39. Shiue, Paul	Christian Brothers University
40. Snow, Kevesha	Christian Brothers University
41. Somers, Tagore	Eli Lilly
42. Stokes, James	Bass River Advisors
43. Thakar, Aayush	Truckish
44. Waller, Alandria	Christian Brothers University
45. Wellford, Brandon	Bioworks
46. Zhou, Joe	FedEx

## Active Members

*Bayer Consumer Care, Eetbe, Evergreen Packaging, FedEx, GlaxoSmithKline, International Paper, Medtronic, Memphis Bioworks, MicroPort Orthopedics, Olympus Surgical Technologies America, Smith & Nephew, SweetBio, Thaddeus Medical Systems, The Pallet Factory, Wright Medical*

# Distribution Dynamic Measurements Driving Package Testing That's Closer to Reality

*Eric Joneson<sup>1</sup>*

**Abstract:** Sustainable initiatives have reduced the use of structural packaging, often increasing dependency on flexible packaging materials, including containment films. Increased susceptibility to transport dynamics now requires new testing technology and methodologies to validate unit load stability and protective performance. This presentation will include real-world examples of both transport measurement and laboratory test simulation.

**Keywords:** *Distribution packaging; Transport dynamics; Unit load stability; Protective performance; Lab test simulation*

## **Presenter:**

*Eric Joneson* – Eric is responsible for promoting Lansmont's Field-to-Lab® methodology through demonstrable applications, undertaken with both academia and industry partners. Eric actively participates in key industry and research groups associated with performance packaging and has provided numerous technical presentations at related events throughout the world over the last twenty-plus years. Eric uses these interactions to help better understand research and commercial needs, thus driving further Lansmont product and technology innovation. Eric is considered a subject matter expert in the areas of both field data collection and analysis, as well as the development of directly related laboratory test procedures.

- BS in Packaging from Michigan State University
- ISTA Past President – Global Board of Directors
- Distribution Testing and Measurement Expert Witness
- ISTA CPLP Professional
- Member and active in ASTM D10
- Member and active in IAPRI
- Numerous technical presentations and case studies delivered in global locations
- Nearly 30 years at Lansmont

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<sup>1</sup> Vice President of Technology, Lansmont. [eric\\_joneson@lansmont.com](mailto:eric_joneson@lansmont.com)

# Multi-Axis Simulation of Vibration during Transportation by Truck

*Tagore Somers<sup>1</sup> and Jeff Chida<sup>2</sup>*

**Abstract:** Shipping studies to confirm product quality through distribution are a pre-requisite for approval of pharmaceutical products and medical devices. To reduce cost and increase statistical confidence in these studies, Eli Lilly has developed a test facility capable of executing multi-axis vibration studies within a temperature and pressure controlled environment. Since industry standard vibration profiles are not available for multi-axis vibration, Lilly has developed multi-axis vibration profiles based on data recorded during domestic and international product shipments. This paper will discuss the methodology for acquiring and processing vibration data and the approach to creation and execution of test protocols using the Lilly profiles for Vibration, Temperature and Pressure. The paper will focus on the current profiles for over the road trucks, but will include summary conclusions regarding data collected for transport by Ocean and Air as well as next steps planned to mitigate limiting factors in the process

**Keywords:** *Multi-Axis Vibration; Transport Packaging; Truck Vibration*

## **Presenters:**

*Tagore Somers* - Tagore earned his Bachelor of Science in Mechanical Engineering at Boston University and a Master of Science in Manufacturing Engineering from Massachusetts Institute of Technology. He has worked at Eli Lilly and Company for 15+ years as a Technical Leader in Medical Device Systems Engineering and as a Project Manager in the Global Serialization Program. In his current assignment, Tagore is the Technical Leader for analysis and simulation of Vibration during product shipping. Prior to joining Lilly Tagore worked for 10 years at Raytheon on the development and commercialization of mobile robots for industrial applications in hazardous environments and for 5 years at Northrup Grummen on the Trident II submarine navigation system.

*Jeffrey M. Chida* - Jeff earned his Bachelor of Science in Packaging at Michigan State University. He has worked at Eli Lilly and Company for 19+ years in various packaging roles (R&D and Corporate Engineering). In his current assignment, Jeff is supporting the qualification of cold chain shipping containers and distribution testing as it relates to new launching new biologics.

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<sup>2</sup> Packaging Engineer, Eli Lilly, Eli Lilly and Company, [chida\\_jeffrey\\_m@lilly.com](mailto:chida_jeffrey_m@lilly.com)

# Hot Sun / Cold Storage

*Nicole Smith<sup>1</sup> and Michael Goodwyn<sup>2</sup>*

**Abstract:** In this age of technology there are vast regions of the world that are rich in natural resources, but lacking basic infrastructure such as clean water, ice and refrigeration for food and medical preservation. Nations experience 40 - 60% food waste due to lack of adequate storage facilities and processing capabilities, farmers and marketers live in poverty, and 1 in 5 children perish due to a lack of clean drinking water. Aldelano will demonstrate how to bring refrigeration, clean water and even ice to remote areas using the power of the sun.

**Keywords:** *Clean water; refrigeration; solar energy*

## **Presenter:**

*Nicole Smith* – Nicole Smith is a 28-year industry professional and the Chief Operating Officer of Aldelano Corporation: specialists in customized packaging and warehousing services for the past 50 years, and Aldelano Solar Cold Chain Solutions: global leaders in total-off grid solar solutions specializing in Refrigeration and Freezer storage, Water Generation, Ice and Auxiliary Power. Nicole has overseen the startup and operations of dozens of facilities and projects, working closely with Fortune 500 clients. She overseen the development of the Solar ColdBox line of products and continues to lead in the advancement and improvement of these products and their implementation around the globe.

*Michael Goodwyn* - Michael Goodwyn is a certified Electrical Engineer with 6 years of Navy training in engineering and mechanics. His early career was in construction, overseeing multiple building projects, until he joined the world of packaging and manufacturing as a production and operations manager. Michael is the Lead Engineer and Operations Manager for the ColdBox project and the brains behind much of the innovative technology.

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# Life is a Box of Chocolates

*Phillip Ashley Rix<sup>1</sup>*

**Abstract:** Perishable shipping is both art and science. Learn how a luxury chocolate business developed methods to ship product around the world and helped a gelato maker and other food brands create 365 days of business.

**Keywords:** *Perishable shipping; Chocolate*

## **Presenter:**

*Phillip Ashley Rix* - Phillip Ashley is one of the world's preeminent chefs and designers of luxury chocolate. He is an award-winning chocolatier, Founder and CEO of Phillip Ashley Chocolates, based in Memphis, Tennessee. The brand has an international following and is sought out by high-profile clients, major events and top corporations. National luxury retailer, Neiman Marcus, offers his signature designer chocolates to its clientele. He has served as the Official Chocolatier, 69th EMMY® Awards Governors Ball, the 58th GRAMMYS® Awards Celebration and named one of Best Chocolatiers and FORBES Magazine named Phillip Ashley the Real Life Willy Wonka. Aside from his demonstrated business success, Phillip Ashley has continued to invest in young people and develop the entrepreneurship ecosystem in Memphis. He created the Entrepreneurship Master Class and serves on the FedEx Small Business Advisory Council. He has also donated hours of time and product helping to raise tens of thousands for local charities over the past six years, including Le Bonheur Heart Institute. Phillip Ashley is a champion for the Memphis community representing the city on an international scale. He's a proud dad of 16 year old twin daughters, Kenady and Madisyn, as well as 12 and 4 year old sons, Christian Phillip and Carter Ashley.

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<sup>1</sup> President & Designer Chocolatier, Phillip Ashley Chocolates, 798 South Cooper Street, Memphis TN 38104.  
[phillip@phillipashley.com](mailto:phillip@phillipashley.com)



# Optimum Corner Offset for Diagonal-Corner Cubical Boxes

*Siripong Malasri<sup>1</sup>, Jade Housewirth, Deliya Duckworth,  
Conrado Jimenez, Britney Payne, and Yuliana Luna*

**Abstract:** Several C-flute single-wall regular slotted cubical corrugated boxes with dimensions from 12X12X12 to 22X22X22 were modified at the four corners with corner offsets from 1 inch to 8 inches to form diagonal corners. They were conditioned at the standard test condition of 73 ° F and 50% RH for about 24 hours. The optimum corner offset varied from 22% of box dimension to 26% with an average of 24%. In addition, there was an average of 14% savings on material from the optimum corner offset.

**Keywords:** *Diagonal-Corner Box; Corner Offset; Corrugated Box*

## **Presenters:**

*Siripong Malasri* – Pong is Dean of Engineering at Christian Brothers University. He is also Director of the Healthcare Packaging Consortium and an ISTA CPLP Professional.

*Jade Housewirth, Deliya Duckworth, Conrado Mimenez, Britney Payne, and Yuliana* – Jade, Deliya, Conrado, Britney, and Yuliana are B.S. in Engineering Management (Packaging Concentration) students and ISTA CPLP Technicians.

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# Non-Interlocking vs Interlocking Arrangements of Multi-Pack Water Bottles under Semi-Confinement Condition

*Siripong Malasri<sup>1</sup>, Deliya Duckworth, Jade Housewirth,  
Britney Payne, and Conrrado Jimenez*

**Abstract:** Water bottles are sold in multi-pack of several bottles and shrink-wrapped for handling purposes. In this study a rubber exercise band was used to apply lateral pressure to a pack of four 16.9-oz drinking water bottles. Under this semi-confinement condition, the pack stacking strength increased up to 19% for non-interlocking bottle arrangement. However, the lateral pressure decreased the stacking strength for interlocking bottle arrangement due to the non-uniform load-carrying distribution of the four bottles.

**Keywords:** *Drinking Water Bottles; Semi-Confinement Compression Strength; Multi-Pack Bottle Arrangement*

## **Presenters:**

*Siripong Malasri* – Pong is Dean of Engineering at Christian Brothers University. He is also Director of the Healthcare Packaging Consortium and an ISTA CPLP Professional.

*Deliya Duckworth, Jade Housewirth, Britney Payne, and Conrrado Jimenez* – Deliya, Jade, Britney, and Conrrado are B.S. in Engineering Management (Packaging Concentration) students and ISTA CPLP Technicians.

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# Properties of Corrugated Fiberboard and Box

*Siripong Malasri<sup>1</sup>, Deliya Duckworth, Alandria Waller,  
Vanessa Cervantes, and Daniel Gamez*

**Abstract:** In this study, various corrugated fiberboard and box properties were verified so students had first-hand experience. These include:

- Directional property of corrugated fiberboard

The average ECT of 16 specimens in the direction perpendicular to flute was found to be 43% of that in the direction parallel to flute.

- Humidity effect on ECT strength of corrugated fiberboard

The ECT values decreased when the relative humidity increased from 50% to 90%. It was also found that the ECT values also decreased when the relative humidity decreased from 50% to 20%.

- Effect of humidity history to corrugated box compression strength

When corrugated boxes underwent high humidity (90%) or low humidity (20%) and back to normal condition of 50%, the box compression strength was found to be lower than that of boxes kept under 50% RH at all time.

**Keywords:** *Corrugated Fiberboard; Corrugated Box; Humidity Effect*

## **Presenters:**

*Siripong Malasri* – Pong is Dean of Engineering at Christian Brothers University. He is also Director of the Healthcare Packaging Consortium and an ISTA CPLP Professional.

*Deliya Duckworth, Alandria Waller, Vanessa Cervantes, and Daniel Gamez* – Deliya, Alandria, Vanessas, and Daniel are B.S. in Engineering Management (Packaging Concentration) students and ISTA CPLP Technicians.

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