

# Revolutionize Your Practice with 3D Printing

January 27-29, 2023 | Caesars Palace | Las Vegas, Nevada, USA

## Friday, January 27

7:00am-8:00am		Breakfast		East Promenade
8:00am-8:30am	O AT CT	Opening Remarks & The History of 3D Printing in Orthodontics	Kenneth Webb, DMD	Julius Ballroom 1-11, 25
3D Printing Basics				
8:30am-9:15am	O CT	The ABCs of Printing in 3D	Christian Groth, DDS, MS	Julius Ballroom 1-11, 25
9:15am-10:00am	O CT	From Models to Appliances: What Opportunities 3D Printing has Offered my Practice in the Past 10 Years	Sean Holliday, DDS, MS	
9:30am-6:00pm		Exhibit Hall Open		Julius Ballroom 12-24
10:00am-10:30am		Morning Refreshment Break/Exhibit Hall		Julius Ballroom 12-24
3D Printer Selection				
10:30am-11:15am	O AT CT	Supercharge Your Practice with an In-House 3D Printing Lab!!!	Edward Lin, DDS, MS	Julius Ballroom 1-11, 25
Model Printing				
11:15am-12:00pm	O CT	Optimization of 3D Printing Parameters for Orthodontic Applications	Wellington Rody, DDS, MS	Julius Ballroom 1-11, 25
12:00pm-1:00pm		Lunch Break/Exhibit Hall		Julius Ballroom 12-24
Workflow				
1:00pm-1:45pm	O AT CT	How to Build a Practical In-Office Aligner System	Rooz Khosravi, DMD, PhD, MSD	Julius Ballroom 1-11, 25
1:45pm-2:30pm	O CT	Taking Your Practice from Retainers to 100% In-Office Aligners: Lessons from 6 Years of In-Office 3D Printing	Jep Paschal, DMD, MS	
2:30pm-3:00pm		Afternoon Refreshment Break/Exhibit Hall		Julius Ballroom 12-24
Software				
3:00pm-3:30pm	O CT	Taking Back Aligner Control with In-House Aligners	Eric Wu, DMD	Julius Ballroom 1-11, 25
3:30pm-4:00pm	O CT	Virtual Setups for In-House Aligners: Are All Software the Same?	Tarek ElShebiny, DDS, MSD	
4:00pm-5:00pm	O AT CT	Panel Discussion <i>Moderated by Matthew Larson, DDS, MS</i>	Friday Afternoon Speakers: Rooz Khosravi, DMD PhD, MSD; Jep Paschal, DMD, MS; Eric Wu, DMD; Tarek ElShebiny, DDS, MSD	
5:00pm-6:00pm		Reception/Exhibit Hall		Julius Ballroom 12-24

**Target Audience Key:**  
 O – Orthodontists  
 AT – Orthodontic Administrative Team  
 CT – Orthodontic Clinical Team

Saturday, January 28

7:00am-8:00am Breakfast East Promenade

Hands-On Supplier Demonstrations				
8:00am-12:00pm	O AT CT	Featuring 365 Printing, ArchForm, DentalMonitoring, Invisalign iTero & uLab Systems		Julius Ballroom 12
9:30am-6:00pm		Exhibit Hall Open		Julius Ballroom 12-24
10:00am-10:30am		Morning Refreshment Break/Exhibit Hall		Julius Ballroom 12-24
12:00pm-1:00pm		Lunch Break/Exhibit Hall		Julius Ballroom 12-24

In-House Aligners				
1:00pm-1:30pm	O CT	Utilizing In-Office 3D Printing for More Than Orthodontic Aligners & Retainers	Andy Hayes, DDS, MSD	
1:30pm-2:00pm	O AT CT	Going Pro with Your Aligners: The Look & Feel Your Patients Need	Roberto Carrillo, DDS, MS, PhD	Julius Ballroom 1-11, 25
2:00pm-2:30pm	O AT CT	Streamlining In-Office Aligners: Do You want to be a Clinician, Technician, or Both?	Melissa Shotell, DMD, MS	
2:30pm-3:00pm		Afternoon Refreshment Break/Exhibit Hall		Julius Ballroom 12-24
3:00pm-4:00pm	O	How to Become an In-House Aligner Powerhouse	Jason Cope, DDS, PhD, FACD	
4:00pm-5:00pm	O AT CT	Panel Discussion <i>Moderated by Neal Kravitz, DMD, MS</i>	Saturday Afternoon Speakers: Andy Hayes, DDS, MSD; Roberto Carrillo, DDS, MS, PhD; Melissa Shotell, DMD, MS; Jason Cope, DDS, PhD, FACD	Julius Ballroom 1-11, 25
5:00pm-6:00pm		Reception/Exhibit Hall		Julius Ballroom 12-24

Sunday, January 29

7:00am-8:00am Breakfast East Promenade

Indirect Bonding				
8:00am-8:45am	O	A Guide to Optimizing Digital Indirect Bonding & to Maximize Practice Efficiency	Lisa Alvetro, DDS, MSD	Julius Ballroom 1-11, 25
3D Printed Aligners & Brackets				
8:45am-9:30am	O	Direct Printing Orthodontic Aligners: The Future is Here	Ki Beom Kim, DDS, MSD, PhD	
9:30am-10:15am	O	The State of Mass-Customization in Orthodontics	Alfred Griffin, DMD, PhD, MMSc	
10:15am-11:00am	O CT	3D Printing Beyond Aligners	Brandon Owen, DDS, MS	
11:00am-11:45am	O CT	Panel Discussion <i>Moderated by Kenneth Webb, DMD</i>	Sunday Morning Speakers: Lisa Alvetro, DDS, MSD; Ki Beom Kim, DDS, MSD, PhD; Alfred Griffin, DMD, PhD, MMSc; Brandon Owen, DDS, MS	Julius Ballroom 1-11, 25
11:45am-12:00pm	O AT CT	Closing Remarks & The Future of 3D Printing in Orthodontics	Planning Committee	

Target Audience Key:	O – Orthodontists AT – Orthodontic Administrative Team CT – Orthodontic Clinical Team
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7:00am-8:00am | Breakfast

8:00am-8:30am

0.50 CE

### The History of 3D Printing in Orthodontics



Webb

*Presented by Kenneth Webb, DMD*

This course will provide a short review of the history of 3D printing in orthodontics. A review of the 3D digital processes that allow for in-office 3D printing will also be discussed. The future of 3D printing in orthodontics? I'll provide my best guesses!

Learning Objectives:

- Evaluate how 3D printing has impacted the way orthodontists deliver care to their patients.
- Comprehend why incorporating 3D digital processes into their practices, including 3D printing, will position them for success in the future.
- Assess why the transformation of analog processes in their practices to digital is inevitable and beneficial. Not only for themselves and their staff, but for their patients as well.

Graduate of Tufts University School of Dental Medicine - DMD: 1982; Served as a General Dentist on active duty in the United States Air Force: 1982-1986; Completed Orthodontic Residency at Tufts University School of Dental Medicine: 1988; Private Practice in Orthodontics: 1988-2022; Member AAO Committee on Technology: 2017-2022; President of the Northeastern Society of Orthodontists 2021-2022

### 3D Printing Basics

8:30am-9:15am

0.75 CE

### The ABCs of Printing in 3D



Groth

*Presented by Christian Groth, DDS, MS*

3D printing has changed the way that we practice orthodontics through the digital workflow and elimination of messy and inaccurate clinical processes. From using 3D printing for retainers and aligners to making and printing our own appliances, we will go through how 3D printing works and ways to successfully implement 3D printing in your practice. This course is designed to give attendees a general overview of the 3D printing process - including how to prepare files for printing, choosing a 3D printer, and the 3D printing and post-processing procedures.

Learning Objectives:

- Learn about the digital workflow as it relates to 3D printing.
- Choose a 3D printer for your office.
- Implement 3D printing and post-processing procedures.

Dr. Christian Groth graduated from Emory University in Atlanta and received his dental and orthodontic training at the University of Michigan. As a lifelong technology enthusiast, he brought this passion into his orthodontic practice and commercial 3D printing laboratory. Dr. Groth is a diplomate of the American Board of Orthodontics and lectures on the digital orthodontics at the University of Michigan. He serves as an advisor for several companies, lectures nationally and is published on the use and integration of technology in the orthodontic office.

Disclosure: Consultant (3M Oral Care), Stock Shareholder (Motor City Lab Works, Smile Doctors, CADflow, Braces on Demand)

9:15am-10:00am

0.75 CE

### From Models to Appliances: What Opportunities 3D Printing has Offered my Practice in the Past 10 Years



Holliday

*Presented by Sean Holliday, DDS, MS*

Desktop 3D printers have opened the door to many opportunities for orthodontic practices to bring additive manufacturing to their armamentarium. Once you commit to integrating into the process, orthodontists must consider printer choices and navigate the large selection to balance utility, cost, speed, and print quality. This course will discuss my ten-year journey with 3D printing, the evolution of the technology, and the various uses this tool offers to all orthodontists who choose to add additive manufacturing into their practice.

Learning Objectives:

- Understand the challenges and opportunities of vertical integration in an orthodontic practice.
- Differentiate between printer designs and functions based on the intended manufacturing goal.

- Consider common uses of 3D printers to enhance the services an orthodontic practice provides and improve the patient experience.

Dr. Sean Holliday earned his dental degree from the University of Missouri- Kansas City and his orthodontic certification and master's degree from the University of Illinois at Chicago. Dr. Holliday is a board-certified Diplomate of the American Board of Orthodontics, a published author and public lecturer. He is a leader in digital orthodontics, an early adopter in 3D printing technology, and a primary focus on clear aligner therapy. Dr. Holliday has treated over 7,000 clear aligner cases, teaches digital orthodontic techniques, and is involved in various clinical research in digital orthodontics. He leads and operates four orthodontic offices and practices full-time on the island of Oahu.

**9:30am-6:00pm | Exhibit Hall Open**

**10:00am-10:30am | Morning Refreshment Break/Exhibit Hall**

### 3D Printer Selection

**10:30am-11:15am**

**0.75 CE**

#### Supercharge Your Practice with an In-House 3D Printing Lab!!!



*Lin*

*Presented by Ed Lin, DDS, MS*

Dr. Lin began his journey to integrate in-house 3D printing into his practices in 2013. In his lecture, Dr. Lin will share with the audience his experiences over the years with key considerations for purchasing a 3D printer and also for creating an in-house 3D printing and digital orthodontic lab. Having an in-house 3D printing and digital orthodontic lab provides the orthodontic practice(s) with the ability for an incredibly efficient digital workflow for faster turnaround times for all orthodontic appliances including in-house aligners. Most importantly, Dr. Lin will share his thoughts on how to build a great digital orthodontic lab team with efficient digital workflow systems to ensure the success with the practice(s) for both clinic and lab.

#### Learning Objectives:

- Identify the key factors to consider when purchasing a 3D printer.
- Set up a 3D printing lab within your own practice.
- Set up efficient digital workflow systems for an in-house 3D printing lab.

Dr. Ed Lin is one of two partners at Orthodontic Specialists of Green Bay (OSGB) and also a former partner at Apple Creek Orthodontics of Appleton (ACO). OSGB and ACO are all completely digital practices and have been utilizing intraoral scanning and SureSmile since February of 2004 and all practices have been impression free since 2015. All practices have been involved with cone beam computed tomography (CBCT) with the iCAT since 2005 and In-House 3D printing has been incorporated since 2013 with In-House aligner treatment a very important part of all practices. Dr Lin is an internationally recognized speaker, has written several articles that have been published in a wide variety of dental journals, and has lectured at several orthodontic residency programs across the world. He is a Clinical Advisory Board Member for SureSmile and also a Key Opinion Leader for American Orthodontics, Imaging Sciences International, Desktop Health, uLab, and Hu-Friedy. He is a past member of the American Association of Orthodontist's Committee on Technology and is on the Editorial Board of OrthoTown and Orthodontic Practice journals. Dr. Lin is an alumnus of the University of Chicago and received both his dental (DDS) and orthodontic (MS) degrees from Northwestern University Dental School.

Disclosure: Consultant (Desktop Health, Easy RX, uLab Systems), Stock Shareholder (Desktop Health, Easy RX, uLab Systems), Honorarium (Desktop Health)

### Model Printing

**11:15am-12:00pm**

**0.75 CE**

#### Optimization of 3D Printing Parameters for Orthodontic Applications



*Rody*

*Presented by Wellington Rody, DDS, MS*

Our profession is experiencing an exciting amount of technological growth with major advancements in 3-dimensional printing (3DP). Besides diagnostic and treatment planning applications, 3DP plays an increasing role in facilitating in-house laboratory systems previously conducted by the manufacturing industry and rarely attempted in the ordinary orthodontic office laboratory. To this end, 3DP in orthodontics is primarily used for the production of physical dental models required for the fabrication of clear thermoformed aligners, retainers and other orthodontic appliances. Therefore, as this technology evolves, we expect to see a greater number of orthodontic practices equipped with 3DP capabilities. A substantial body of literature is slowly building up which attempts to guide orthodontists in the implementation of in-house digital laboratories with rapid prototyping capability; however, findings are still contradictory, and many questions remain unanswered. This presentation will review the literature and report the findings of original research that Wellington Rody sought to investigate the influence of 3D printing parameters on the accuracy of orthodontic models and in the fit of thermoformed appliances (TAs).

#### Learning Objectives:

- Identify opportunities to apply 3D printing technology for time saving in orthodontic practices.
- Gain insight into different 3D printing techniques, manufacturing parameters, and application possibilities.
- Evaluate the advantages and disadvantages of different workflows for manufacturing 3D printed models and thermoformed appliances.

Dr. Wellington Rody is the Chair of the Department of Orthodontics and Dentofacial Orthopedics at the University of Pittsburgh. He is a diplomate of the American Board of Orthodontics (ABO) and a member of the American Association of Orthodontists Foundation (AAOF) Planning and Awards Review Committee (PARC). Dr. Rody has over 25 years of clinical experience as an orthodontist and is heavily involved in the overall clinical and didactic education of orthodontic residents. He has been funded from the AAOF and the NIH for his work in translational studies that are relevant to orthodontics.

**12:00pm-1:00pm | Lunch Break/Exhibit Hall**

#### Workflow

**1:00pm-1:45pm**

**0.75 CE**

#### How to Build a Practical In-Office Aligner System



*Khosravi*

*Presented by Rooz Khosravi, DMD, PhD, MSD*

This course provides essential knowledge on an in-office aligner (IOA) system. It also allows the attendees to determine the extent which their IOA system could be implemented in their practice. I will review practical application of an IOA system in an orthodontic practice including how to combine aligners with fixed appliances.

#### Learning Objectives:

- Learn about components of an IOA system.
- Identify a plan for a practical digital lab supporting an IOA system.
- Determine how to integrate an IOA system with fixed appliances to improve patient care.

Dr. Rooz Khosravi is a clinical assistant professor at the University of Washington. He is passionate about integration of digital technology in the practice of orthodontics with primary focus on the implementation of 3D printing and an in-office aligner system. Dr. Rooz practices at PORTH, a modern orthodontic clinic with two locations in Bellevue and Sammamish, WA. In addition to private practice and academic life, Dr. Rooz is an orthodontist-scientist consultant in various companies expanding the boundaries of digital orthodontics. In 2019, Dr. Rooz established the Digital Orthodontic Hub (DOH) where he has trained numerous orthodontists and their team on integration of 3D printing technology in their office.

Disclosure: Consultant (uLab Systems, SprintRay, Grin, BayMaterial),  
Stock Shareholder (uLab Systems, Straumann)

**1:45pm-2:30pm**

**0.75 CE**

#### Taking Your Practice from Retainers to 100% In-Office Aligners: Lessons from 6 Years of In-Office 3D Printing



*Paschal*

*Presented by Jep Paschal, DMD, MS*

This course will provide the viewer with the Why, What, and How for the implementation of In-Office manufacturing of Orthodontic Aligners. From scanning to printing to aligner manufacturing. From 0 to 200 aligners a week. We will cover all the methodologies utilized by a solo practitioner to deliver these services at scale.

#### Learning Objectives:

- Implement the latest in-house solutions for 3D printing in the orthodontic setting.
- Iteratively implement a digital workflow that will not overwhelm your existing systems or staff.
- Identify the various ways that in-house 3D printing can enhance your existing treatment protocols and actually decrease time in fixed appliances in a financially sound manner.

Dr. Jep Paschal is a proud husband, father of three, a solo practitioner, a technologist, and an orthodontic futurist. He has had the privilege of lecturing all over the world helping Orthodontists learn the value of digital orthodontics, In-Office Aligner Design and Manufacturing, the Sagittal First treatment philosophy, and the Passive Self Ligation treatment philosophy. He received his BS from Emory University and his DMD from the Medical College of Georgia. Completed residencies in Prosthodontics, then a General Practice Residency and his Master of Science degree in Biomaterials & Prosthodontics at the University of Texas Health Science Center at San Antonio. Dr. Paschal maintained a private practice in Prosthodontics and Implant Dentistry before returning for a residency in Orthodontics at the University of Rochester Eastman Dental Center.

Dr. Paschal has served on the Board of Directors for the American Association of Orthodontists Foundation, as President of the Georgia Association of Orthodontists, as a member and Chairman of the Council on Communications for the AAO, and as a member and Co-Chair for the AAO Future Think Tank. Dr. Paschal currently maintains a private orthodontic

practice in Madison and Lake Oconee, Georgia, USA. His hobbies include family, computers and technology, reading, skiing, and travel.

Disclosure: Consultant (Henry Schein Orthodontics, Braces on Demand, SprintRay),  
Stock Shareholder (Smile Doctors, OrthoFi, Qlark, Braces on Demand)

## 2:30pm-3:00pm | Afternoon Refreshment Break/Exhibit Hall

### Software

3:00pm-3:30pm

0.50 CE

#### Taking Back Aligner Control with In-House Aligners



Wu

*Presented by Eric Wu, DMD*

As technology evolves, strategies to create effective and efficient clear aligner workflows are essential to the success of any busy orthodontic practice. Dr. Wu has found a balance between both in-office aligner production and outsourcing. He will share his latest in digital workflows including the role of the digital orthodontic assistant, concierge treatment planning and seamless chairside treatment planning.

##### Learning Objectives:

- Outline the benefits of an in-office aligner lab versus outsourcing aligner production.
- Identify an efficient digital aligner workflow that includes seamless chairside treatment planning.
- Discover how delegation to a digital orthodontic assistant can optimize work efficiency.

Dr. Eric Wu has extensive experience with 3D printing and has been manufacturing his own orthodontic aligners in office since 2014 and offers an in office course to teach other orthodontists how to implement digital workflow and in house aligners in their offices. He serves as both an innovation advisor and key opinion leader for uLab systems and key opinion leader for OC Orthodontics. Dr Wu advises for Luxcreo, a global leader in the sustainable 3D printing industry. When he isn't practicing, Dr. Wu enjoys teaching at both orthodontic programs at the University of Nevada, Las Vegas and Roseman University in Henderson, NV.

Disclosure: Consultant (uLab Systems), Stock Shareholder (uLab Systems)

3:30pm-4:00pm

0.50 CE

#### Virtual Setups for In-House Aligners: Are All Software the Same?



ElShebiny

*Presented by Tarek ElShebiny, DDS, MSD*

Several virtual tooth movements software programs from different companies are available, which clinicians can utilize for diagnosis, treatment planning, assessing treatment outcomes and virtual setups for in-house aligners. The aim of this presentation is to highlight the differences between different software programs and the benefits of artificial intelligence in virtual treatment planning.

##### Learning Objectives:

- Evaluate significant differences between software programs for virtual setups.
- Recognize the factors to consider when choosing a software program.
- Highlight the benefits of artificial intelligence in virtual treatment planning.

Dr. Tarek ElShebiny completed his orthodontic at Case Western Reserve University in Cleveland, OH, followed by a Surgical Special Care and Craniofacial Orthodontics Fellowship also at CWRU. He was the AAO recipient of the 2017 Craniofacial training award and the AAOF 2020 recipient of the James A. McNamara Orthodontic Faculty Award. He has also lectured nationally and internationally and is currently an assistant Professor and the orthodontic clinic director at Case Western Reserve School of Dental Medicine.

4:00pm-5:00pm

1.00 CE

#### Panel Discussion moderated by Matthew Larson, DDS, MS



Khosravi

Wrap up the day by joining our Friday afternoon speakers for an interactive panel discussion and plan to engage with moderated audience Q&A.

##### Learning Objectives:

- Evaluate the various considerations to be made when planning and implementing 3D printing and in-house aligners into your practice.
- Implement the most practical and efficient applications of this continuously innovative technology.



Paschal



Wu



ElShebiny

5:00pm-6:00pm | Reception/Exhibit Hall

## Saturday, January 28

7:00am-8:00am | Breakfast

### Hands-On Supplier Demonstrations

8:00am-12:00pm

0.00 CE

Supplier Companies TBA

9:30am-6:00pm | Exhibit Hall Open

10:00am-10:30am | Morning Refreshment Break/Exhibit Hall

12:00pm-1:00pm | Lunch Break/Exhibit Hall

### In-House Aligners

1:00pm-1:30pm

0.50 CE

#### Utilizing In-Office 3D Printing for More Than Orthodontic Aligners & Retainers



Hayes

*Presented by Andy Hayes, DDS, MSD*

3D printing has become integral in both retention and treatment with aligners in the orthodontic office. There are many simple applications that are overlooked. In this course we will explore low cost or freeware software solutions for treatment planning and the treatment of orthodontic restorative cases. Digital treatment planning and 3D printing can greatly improve communication with patients and dental colleagues. This lecture will look at readily available materials and applications for direct printing biteguards, simple restorations and some uncommon retention techniques.

#### Learning Objectives:

- Recognize the benefits that digital treatment planning and 3D printing can offer to improve communication with patients and dental colleagues.
- Identify proper situations in their practices where low cost and simple applications for direct printing biteguards, simple restorations and some uncommon retention techniques will be beneficial.
- Evaluate the limitations and strengths of many low cost 3D printers and materials on the market today without having to sacrifice quality.

Dr. Andy Hayes received his D.D.S., M.S.D. and certificate in orthodontics from Indiana University. He is listed as “inventor” on multiple orthodontic patent applications internationally. Dr. Hayes is a Clinical Instructor in the St. Louis University Department of Orthodontics and has been in the private practice of orthodontics since 2006. He has presented lectures pertaining to Class II correction, treatment of impacted canines, ortho-restorative interdisciplinary treatments, and 3D printing on 4 continents. 3D digital scanning, planning and printing technologies have become an integral part of his daily practice.



### Going Pro with Your Aligners: The Look & Feel Your Patients Need



Carrillo

*Presented by Roberto Carrillo, DDS, MS, PhD*

After setting up a 3D lab for aligner fabrication, we tend to forget that fabrication is just the first step in having a product you will be proud of and truly represents you. We are so focused on fabrication and treatment planning that we tend to pay little attention to branding until later in the journey. It is vital that we start addressing the factors that will represent us and our office outside in the aligner treatment market. The look and feel that your product has will play an important role in how you present this treatment and what the perceived value is for the patient and your community.

#### Learning Objectives:

- Identify what complements make your aligners more appealing to your patients.
- Prioritize branding goals of aligners.
- Recognize the tools to offer your patients that can improve the acceptance rate.

Dr. Roberto Carrillo obtained his dental degree from the UANL Dental School in Mexico. He received his Orthodontic Certificate, Master of Science and PhD Degree in Craniofacial Biology from TEXAS A&M College of Dentistry. He is a member of the Edward H. Angle Society of Orthodontist, the AAO and the Mexican Association of Orthodontist and is a Diplomat of the American Board of Orthodontists and the Mexican Board of Orthodontists. Since 2014 he serves as a commissioner on the Scientific Affairs for the Mexican Association of Orthodontist. He currently teaches at the UANL Orthodontic Department and is also a part time faculty at TEXAS A&M Orthodontic Program in Dallas, Texas, and at the ITESM Dental School in Mexico. He practices together with his dad in their office in San Pedro Garza Garcia, were together they have developed several international orthodontic patents. He has received recognition awards by the AAO, The EH Angle Society and Texas A&M College of Dentistry for his publications, and currently serves as a reviewer for The Angle Orthodontist, AJODO, and EO and has given multiple lectures at the AAO, Angle Society Meetings, Mexican Association Meetings and many other international meetings.

Disclosure: Stock Shareholder (Aliwell)

### Streamlining In-Office Aligners: Do You want to be a Clinician, Technician, or Both?



Shotell

*Presented by Melissa Shotell, DMD, MS*

Incorporating in-office clear aligner workflows into a busy orthodontics practice can be a challenge and implementing a system with team member delegation to maximize efficiency is critical. This presentation will explore aligner workflows in both the clinical and laboratory setting while discussing the technology currently available to maximize clinical and laboratory productivity. As interest in clear aligners increases, streamlined clinical practices find creative ways to adapt the current model of outsourcing aligner design. This presentation aims to address the organizational challenges of both direct patient care and in-house laboratory production.

#### Learning Objectives:

- Understand the clinical and laboratory requirements to utilize an in-office clear aligner workflow.
- Recognize skills to strive for maximum efficiency with in-office clear aligner workflows.
- Outline the steps to develop an action plan to implement in-office clear aligner workflow into everyday practice.

Dr. Melissa Shotell is a Board Certified Orthodontist and practices in a multi-specialty practice in Sonora, CA focusing on the interplay of orthodontics and restorative treatment. Dr. Shotell received her DMD at Nova Southeastern University and a General Practice Residency Certificate from Ohio State University. After spending years in general practice treating a broad range of patients, Dr. Shotell returned to complete a certificate and master's degree in orthodontics from Loma Linda University. At Loma Linda University, Dr. Shotell focused her training on cutting-edge three dimensional imaging technology for diagnosis and treatment planning for interdisciplinary dentistry. Dr. Shotell considers education to be her passion and regularly consults and lectures on dental technology, orthodontics and clear aligner therapy, in-office clear aligners, office efficiency and workflow, and teamwork.

Disclosure: Consultant (Henry Schein Orthodontics)

**2:30pm-3:00pm | Afternoon Refreshment Break/Exhibit Hall**



### How to Become an In-House Aligner Powerhouse

*Presented by Jason Cope, DDS, PhD, FACD*



*Cope*

Have you ever thought that doing in-house aligners (IHA) is too much of a hassle or too expensive up front to justify taking the leap? If you have, think again! Current technology provides today's orthodontist everything they need to get started at historically low costs and manage their own IHA production facility with their own brand that represents and builds their own reputation instead of an outside lab's brand. Modern software allows us to maintain quality, while considerably reducing the expense of outsourcing labwork and delaying treatment starts or refinements. This presentation will introduce the major steps of the Digital Workflow utilizing In-House Aligner Fabrication as the example. We will also cover the basics of setting up a digital lab as well as 3D printing. While many see the future of orthodontics as doomed by market disruption, it is actually an exciting time to reinvent ourselves and create even better experiences and outcomes for our patients. Welcome to the future of Orthodontics! Its bright, and more importantly, we are in control of it!

#### Learning Objectives:

- Appreciate the factors critical to implementing a digital workflow.
- Set up a digital lab.
- Outline the essentials needed to become your own aligner manufacturer.

Dr. Jason B. Cope received his DDS, Orthodontic Certificate, and PhD in craniofacial bone biology from Baylor College of Dentistry, in Dallas, Texas. A prolific author and speaker, Dr. Cope has published 35 journal articles, 36 book chapters, and two orthodontic textbooks. In addition, he has given over 330 presentations, speaking across the US, and in 22 countries on 6 continents. Dr. Cope is an ad hoc reviewer for every major American scientific orthodontic journal. Dr. Cope's private practice is located in Dallas, Texas, where he treats patients 3 days a week. The remainder of his week is spent performing clinical research and developing lecture material, educational aides, and new orthodontic products.

Disclosure: Consultant (uLab Systems, Voxel Dental, SprintRay, VaTech),  
Stock Shareholder (uLab Systems)

### Panel Discussion moderated by Neal Kravitz, DMD, MS

Wrap up the day by joining our Saturday afternoon speakers for an interactive panel discussion and plan to engage with moderated audience Q&A.

#### Learning Objectives:

- Outline the benefits of transitioning to in-house aligner fabrication and production.
- Further evaluate the added benefits of 3D printing other orthodontic appliances.



*Hayes*



*Carrillo*



*Shotell*



*Cope*

**5:00pm-6:00pm | Reception/Exhibit Hall**

7:00am-8:00am | Breakfast

## Indirect Bonding

8:00am-8:45am

0.75 CE

### A Guide to Optimizing Digital Indirect Bonding & to Maximize Practice Efficiency

*Presented by Lisa Alvetro, DDS, MSD*



Alvetro

Indirect Bonding has been a proven clinical procedure for decades. However, the analog method was a labor intensive task limiting its adoption by practitioners. Current advancements in digital technology have significantly simplified the workflow and provide orthodontists with multiple options for indirect bonding. Whether you choose to completely outsource Indirect bonding or manufacture on site, it is a procedure that every practice can implement to optimize practice efficiency.

#### Learning Objectives:

- Understand the digital and clinical steps required to successfully indirect bond.
- Choose which approach to indirect bonding that best fits your clinical setting.
- Feel confident in implementing indirect bonding into your digital workflow.

Dr. Lisa Alvetro has been a solo, orthodontic practitioner in Sidney, Ohio for over 27 years. She received her D.D.S. summa cum laude from Ohio State University in 1991 and completed her orthodontic residency at Case Western Reserve University in 1993. She continues to be involved with CWRU orthodontic department as an associate clinical professor teaching both management strategies and digital orthodontic workflow and technologies. Considered an early adopter of technology, she and her team established Alvetro 3D lab over 6 years ago. In her practice she utilizes the latest technological advances, such as digital imaging, 3D printing, digital indirect bonding and digital workflows to provide her patients with the most effective care possible. She enjoys sharing her digital experience with colleagues and students. Since 2007, she has lectured within the US and abroad. Dr. Alvetro currently works with various software and 3D printer companies as an advisor and evaluator.

A firm believer in the importance of giving back, she founded Smiles of Hope a recognized NGO operating in Tarime, Tanzania. Doctor and her team also donate their resources and talents through their foundation St. Jude Dental cooperative in St Lucia.

Disclosure: Consultant (LightForce Advisory Board),  
Honorarium (Formlabs, 3M OralCare)

## 3D Printed Aligners & Brackets

8:45am-9:30am

0.75 CE

### Direct Printing Orthodontic Aligners: The Future is Here

*Presented by Ki Beom Kim, DDS, MSD, PhD*



Kim

Recently, the fabrication of orthodontic clear aligners by 3D printing has been made possible by the introduction of 3D printable photocuring resins. Direct Printing Orthodontic Clear Aligners (DPA) offer several advantages over conventional thermoforming aligners. DPA allows for greater precision and customizability in designing and manufacturing aligners. Skipping the intermediate steps for fabricating resin staged models and the subsequent thermoforming process can minimize the potential cumulative errors. Being able to control the geometry, DPA can change the fundamentals of clear aligner biomechanics. Additionally, DPA can be more environmentally sustainable, as it reduces the amount of waste generated from printing resin models and thermoforming clear plastic sheets. This presentation will introduce the digital workflow of the manufacturing process of DPA from a staged model file, creating aligner shell files, and adding support, to post-processing procedures.

#### Learning Objectives:

- Recognize the biomechanical advantages of DPA.
- Demonstrate the digital workflow of the fabrication process of DPA.
- Understand the different physical properties of photocurable clear aligner materials from the conventional thermoforming aligner materials.

Dr. Ki Beom Kim is a Dr. Lysle Johnston Endowed Chair in Orthodontics and the Program Director in the Orthodontic Department, Center for Advanced Dental Education at Saint Louis University. He is a Diplomate of the American Board of Orthodontics and a Diplomate of the American Board of Orofacial Pain. He received his dental training in South Korea, finished three years of Oral Medicine training, received his Ph.D. in Orofacial Pain, and completed his orthodontic training at Vanderbilt University Medical Center. He has presented many times at international and national meetings as well as

published close to 100 peer-reviewed articles and multiple book chapters. Additionally, he has participated in over 120 master thesis projects over the years and has had three textbooks written.

9:30am-10:15am

0.75 CE

### The State of Mass-Customization in Orthodontics



Griffin

*Presented by Alfred Griffin, DMD, PhD, MMSc*

The dental industry has been the driving economic force behind most 3D Printing (3DP) innovation in the last decade. Teeth are as unique as fingerprints, which makes orthodontics the ideal application for 3D printing. We will review the state of aligners/fixed appliances, and how a fully digital practice can be more efficient and improve the patient experience, while giving doctors more control.

#### Learning Objectives:

- Familiarize yourself with how 3D printing achieves ideal customization for orthodontics.
- Evaluate the clinical applications and smile design with custom 3D printing.
- Outline the benefits of custom appliances when it comes to scheduling and practice efficiency.

Dr. Alfred Griffin III is the co-founder and CEO of LightForce Orthodontics. Dr. Griffin received his BS in Biochemistry from the University of Virginia, then completed a DMD and PhD at the Medical University of South Carolina in 2014, while lecturing internationally in craniofacial biology. Dr. Griffin has a Masters of Medical Research and Certificate in Orthodontics from the Harvard School of Dental Medicine, where he currently serves as ABO certified faculty. Dr. Griffin founded LightForce Orthodontics in 2015.

Disclosure: Stock Shareholder (LightForce)

10:15am-11:00am

0.75 CE

### 3D Printing Beyond Aligners



Owen

*Presented by Brandon Owen, DDS, MS*

When most people in orthodontics think 3D printing, aligners and retainers come to mind. In this course, we will cover numerous other applications for 3D printing in orthodontics with an emphasis on Indirect bonding and splints/nightguards.

#### Learning Objectives:

- Familiarize yourself with 3D printed indirect bonding trays/workflow.
- Familiarize yourself with 3D printed splints/nightguards.
- Evaluate other 3D printed appliances (expanders, holding arches, class 2 correctors).

Dr. Brandon Owen is the founder/CEO of KLOwen Braces and is the winner of the 2019 OrthoInnovator Award. He holds numerous patents in the digital orthodontic and TMD space. His list of professional memberships include the ABO and the Angle Society. He is a consultant for numerous companies in the dental 3D printing space and was the first dentist to print night guards and digital indirect bonding trays. He practices orthodontics and TMD management in Lakeway, TX, and lectures on the topics of 3D printing, TMD, digital IDB, lingual orthodontics, and digital custom braces.

Disclosure: Stock Shareholder (KLOwen Braces)

11:00am-11:45am

0.75 CE

### Panel Discussion moderated by Kenneth Webb, DMD



Alvetro

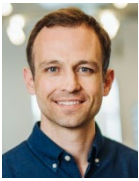
As the conference comes to a close, join our Sunday morning speakers for an interactive panel discussion and plan to engage with moderated audience Q&A.

#### Learning Objectives:

- Assess the value of using digital technology for indirect bonding.
- Gain awareness of and insights into growing innovation and technology in the areas of customized orthodontic appliances.



Kim



Griffin



Owen

11:45am-12:00pm

0.00 CE

### Closing Remarks & The Future of 3D Printing in Orthodontics

Presented by the Winter Conference Planning Subcommittee of the Committee on Conferences & Meetings (CCON)

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