THE 5TH INTERNATIONAL CONGRESS ON ADHESIVE DENTISTRY

JUNE 14-15, 2013
UNIVERSITY OF PENNSYLVANIA
ANNENBERG CENTER FOR PERFORMING ARTS
PHILADELPHIA, PA

HOSTED BY
Penn Dental Medicine
On behalf of the entire Penn Dental Medicine community, I want to welcome you to Philadelphia and the University of Pennsylvania campus for the 5th International Congress on Adhesive Dentistry.

Penn Dental Medicine is especially pleased to be hosting this special meeting. Under the leadership of Dr. Markus Blatz, our Department of Preventive and Restorative Sciences organizing committee and the global executive committee have brought together a truly remarkable group of international clinicians, researchers, and industry leaders to share the latest advances in adhesive dentistry.

The rapidly growing and changing field of adhesive dentistry is greatly improving esthetics while also increasing treatment options across specialties, and this program offers a unique opportunity to not only learn about the latest techniques and technologies, but also to explore new collaborations with colleagues. I am looking forward to the professional exchange and encourage you to be part of the discussions.

Thank you for joining in this international gathering. Enjoy the program and your visit to Philadelphia and the Penn campus.

Denis F. Kinane, BDS, PhD
Morton Amsterdam Dean
Penn Dental Medicine

It is with sincere pleasure and great excitement that I welcome you to the 5th International Congress on Adhesive Dentistry (IAD).

Adhesive dentistry has fundamentally altered and literally transformed our field toward significantly less invasive, more esthetic, and longer-lasting dental restorations. In addition, adhesive technologies and resin bonding have vastly expanded clinical treatment options and become key elements of almost every specialty area in modern dentistry. The fast-pace clinical improvements, scientific discoveries, and industry developments are simply fascinating, and we are just beginning to understand the impact adhesive dentistry has on the future of our profession.

The 5th IAD serves as a unique international platform for clinicians, researchers, and the dental industry to focus on this exciting topic, define the state of the science, and discuss future clinical needs and developments.

Over the next two days, some of the most eminent researchers and leaders from around the world will share their latest, cutting-edge science and state-of-art esthetics. These two days are structured by topics, starting with the history and current state of dental adhesion followed by discussing some of the challenges and a look into the future. The afternoon of the first day will feature a scientific corporate forum, where industry leaders will discuss their latest innovations and developments.

Day two will focus on adhesive restorative materials and treatment options, including updates on composite resin materials for direct restorations and on adhesion to indirect materials, such as dental ceramics. Adhesive dentistry in prosthodontics and endodontics will be addressed in the afternoon, covering topics such as endodontic posts and posterior inlays/onlays and culminating in a journey into the world of bonded laminate veneers from a dental technician’s point of view.

Peer-reviewed scientific and clinical poster presentations pertaining to all aspects of adhesive dentistry will be open to you during the course of the congress. Awards for the best posters will be presented at the conclusion of the meeting.

In this globally connected fast-paced world and in light of the rising importance of dental adhesion, we believe that it is time to start a focused society of eminent experts, researchers, clinicians, and leaders from around the world. We are, therefore, excited to announce that during the 5th IAD, we will hold the founding meeting of the INTERNATIONAL ACADEMY FOR ADHESIVE DENTISTRY (IAAD) during Friday’s lunch break.

Let me thank all the people involved in making this congress a great success: the global executive committee; our local organizing committee, faculty, and staff; the speakers, poster presenters, and moderators; and – last but not least – our industry sponsors; without your generous support, partnership, and guidance, this meeting would not be possible.

Welcome and thank you for joining us to celebrate the state-of-the-art and future of adhesive dentistry.

Markus B. Blatz, DMD, PhD
President of the 5th IAD
Chair and Professor of Preventive and Restorative Sciences
Penn Dental Medicine
Continuing Education Credits
Attendees of this two-day program can earn up to 13 continuing education credits.
The University of Pennsylvania School of Dental Medicine is an ADA CERP Recognized Provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

5th IAD Organizing Committee

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<th>MEMBERS</th>
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<tr>
<td>Markus Blatz</td>
<td>President, 5th IAD, Penn Dental Medicine, USA</td>
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<td>Fusun Ozar</td>
<td>Vice President, 5th IAD, Penn Dental Medicine, USA</td>
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<td>Junji Tagami</td>
<td>Senior Vice President, 5th IAD, and President, 1st IAD, Tokyo Medical and Dental University, Japan</td>
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<td>Syngcuk Kim</td>
<td>Continuing Education Chair, Penn Dental Medicine, USA</td>
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<td>Riccardo Walter</td>
<td>Scientific Chair, 5th IAD, Penn Dental Medicine, USA</td>
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<td>Alan Atlas</td>
<td>Corporate Relations Chair, 5th IAD, Penn Dental Medicine, USA</td>
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<td>Najeed Saleh</td>
<td>Clinic Committee Chair, 5th IAD, Penn Dental Medicine, USA</td>
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Executive Committee/Scientific Advisory Board

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<tr>
<th>MEMBERS</th>
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<tr>
<td>Luiz Baratieri</td>
<td>Federal University of Santa Catarina, Brazil</td>
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<td>Stephen Bayne</td>
<td>University of Michigan, USA</td>
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<td>Lorenzo Breschi</td>
<td>University of Trieste, Italy</td>
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<td>Ji-Hua Chen</td>
<td>President, 3rd IAD, Fourth Military Medical University, P.R. China</td>
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<td>William Cheung</td>
<td>Hong Kong, China</td>
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<td>Didier Dietschi</td>
<td>Geneva, Switzerland</td>
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<td>Sillas Duarte</td>
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<td>Jacki Ferracane</td>
<td>Oregon Health and Science University, USA</td>
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<td>Franklin Garcia-Godoy</td>
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<td>Fatma Karay</td>
<td>Istanbul University, Turkey</td>
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<td>Hideo Matsumura</td>
<td>Past President, Japanese Society of Adhesive Dentistry, Nihon University, Japan</td>
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<td>Yasuko Momoi</td>
<td>President, Japanese Society of Adhesive Dentistry, Tsurumi University, Japan</td>
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<td>Yoichiro Nara</td>
<td>Nippon Dental College, Japan</td>
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<td>Mutlu Ozcan</td>
<td>University of Zurich, Switzerland</td>
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<td>David Pashley</td>
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<td>Patricia Pereira</td>
<td>University of Brasilia, Brazil</td>
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<td>Jorge Perdigao</td>
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<td>John Powers</td>
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<td>Andre Ritter</td>
<td>University of North Carolina, USA</td>
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<td>Jean-Francois Roulet</td>
<td>University of Florida, USA</td>
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<td>Hideo Sano</td>
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<td>Gottfried Schmalz</td>
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<td>Akira Senda</td>
<td>President, 2nd IAD, Aichi Gakuen University, Japan</td>
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<td>Ho-Hyun Son</td>
<td>President, 4th IAD, Seoul National University, Korea</td>
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<td>Kazuhiro Susee</td>
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<td>Edward Swift</td>
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<td>Bart Van Meerbeck</td>
<td>University of Leuven, Belgium</td>
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<td>Nairn Wilson</td>
<td>King College of England, U.K.</td>
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FRIDAY, JUNE 14, 2013
6:30 PM
WELCOME

Join us at Penn Dental Medicine, 240 South 40th Street, for a special welcome reception with colleagues. Visit, relax, and enjoy the music of the Dave Manley Trio and DJ Mark B.
# Program Overview

## Session I – History and Current State of Dental Adhesion
**Moderator:** Jean-Francois Roulet, DDS

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<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>8:00 – 8:10 AM</td>
<td>Opening Remarks</td>
<td>Markus Blatz, DMD, PhD</td>
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<tr>
<td>8:10 – 8:40 AM</td>
<td>The Origin and Development of Dentin Adhesives</td>
<td>Nairn Wilson, CBE, DSc (hc), FDS, FF GDP, FF, FKC</td>
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<tr>
<td>8:40 – 9:10 AM</td>
<td>Clinical Challenges in Adhesive Dentistry</td>
<td>Lorenzo Breschi, DDS, PhD, FADM</td>
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<tr>
<td>9:10 – 9:40 AM</td>
<td>Long-term Durability of Current Adhesives</td>
<td>Silas Duarte, DDS, MS, PhD</td>
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## Session II – History and Current State of Dental Adhesion
**Moderator:** Jean-Francois Roulet, DDS

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<tr>
<th>Time</th>
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<tr>
<td>10:10 – 10:40 AM</td>
<td>Multi-mode Adhesives: Clinical and Laboratory Research</td>
<td>Jorge Perdigao, DMD, MS, PhD</td>
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<tr>
<td>10:40 – 11:10 AM</td>
<td>Improved Bond Durability Using a Self-etch Approach</td>
<td>Bart Van Meerbeek, DDS, PhD</td>
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<tr>
<td>11:10 – 11:40 AM</td>
<td>Dentin Bonding: What is the Weakest Link?</td>
<td>Patricia Pereira, DDS, PhD</td>
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<tr>
<td>11:40 – 11:50 AM</td>
<td>Q&amp;A/Break</td>
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<tr>
<td>11:50 – 12:50 PM</td>
<td>Lunch and Founding Meeting of the International Academy for Adhesive Dentistry (IAAD)</td>
<td>Room 221, Annenberg Center</td>
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## Session III – Update and Future of Dental Adhesion
**Moderator:** Andre Ritter, DDS, MS

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<th>Time</th>
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<tr>
<td>12:50 – 1:20 PM</td>
<td>Future Aspects Concerning Durability of Dentin Bonding</td>
<td>Hidehiko Sano, DDS, PhD</td>
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<td>1:20 – 1:50 PM</td>
<td>Diminishing Nanoleakage at the Bonding Interface of Composite Resin and Dentin</td>
<td>Toru Nikiido, DDS, PhD</td>
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<td>1:50 – 2:20 PM</td>
<td>Nano-characterization of Reinforced Enamel and Dentin by Self-etch Adhesives: Super Tooth Formation</td>
<td>Yasuko Moro, DDS, PhD</td>
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<td>2:20 – 2:50 PM</td>
<td>Q&amp;A/Break</td>
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## Session IV – Update and Future of Dental Adhesion
**Moderator:** Andre Ritter, DDS, MS

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<th>Time</th>
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<tr>
<td>2:50 – 3:20 PM</td>
<td>Relative Contributions of MMPs versus Cathepsin K to Dentin Collagen Degradation</td>
<td>David Pasthey, BS, DMD, PhD</td>
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<tr>
<td>3:20 – 3:50 PM</td>
<td>Cutting Edge Technology to Provide Adhesive Materials with Bio-protective/Bio-promoting Function</td>
<td>Satoshi Imaizato, DDS, PhD</td>
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<td>3:50 – 4:20 PM</td>
<td>Global Efforts to Standardize the Bond Strength Test for Dental Adhesion in ISO/TC106</td>
<td>Yasuko Moro, DDS, PhD</td>
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<td>4:20 – 4:30 PM</td>
<td>Q&amp;A/Break</td>
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## Corporate Scientific Forum
**Moderator:** Alan Atlas, DMD

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<td>4:40 – 6:00 PM</td>
<td>Kuraray, Dentsply, Shofu, 3M ESPE</td>
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## Welcome Celebration

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<th>Time</th>
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<tr>
<td>6:30 PM</td>
<td>Penn Dental Medicine, with Special Musical Guests THE DAVE MANLEY TRIO AND DJ MARK B</td>
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FRIDAY, JUNE 14, 2013, SPEAKERS

Session I – History and Current State of Dental Adhesion

THE ORIGIN AND DEVELOPMENT OF DENTIN ADHESIVES

Presentation abstract: Systems for adhesion to dentin and enamel bonding are recognized to stem from the work of Buonocore in the 1950s. While bonding to enamel has become reliable and predictable, with typically excellent longevity, adhesion to dentin, despite many remarkable advances and innovations and its extensive application in clinical practice, has yet to achieve similar success. Much of the difficulty experienced in consistently producing an effective, durable, and long lasting bond to dentin is related to the complex structure and variable nature and condition of dentin substrates encountered clinically, and the difficulty in applying adhesive systems in a precise manner in complex cavity forms. The work of Fusyama and co-workers in 1979, which heralded the now routine etching of operatively exposed dentin, followed by the description of the resin-infiltrated hybrid layer by Nakabayashi and co-workers in 1982, were transformational in the evolution of dentin adhesion technologies. Subsequently, a substantial and ever expanding body of knowledge and understanding on aspects of adhesion to dentin has evolved and developed through sustained commercial investment and a vast, diverse body of basic, translational and clinical research, which has become, and is anticipated to remain a major element of dental biomaterials science. A great deal has been, as, acknowledged by the many champions, let alone pioneers and giants in the field, more remains to be done to realize the goal of adhesive systems and techniques being considered at all levels to be convenient and reliably effective in producing predictable, durable adhesive bonds across the broad spectrum of the many existing and possible future applications for dentin adhesives. In the meantime, the many different clinical options and considerable patient benefits made possible by modern adhesive dentistry are considered to be cause for considerable celebration. Indeed, operative and esthetic dentistry, in particular, have been transformed in ways which were previously unimaginable, and taken to new levels of sophistication by recent and existing dentin adhesive technologies. Dentin adhesives are not only here to stay, but will play an ever increasing role in the regeneration, preservation, aesthetic enhancement and replacement of teeth.

Speaker Bio: Nairn Wilson, CBE, DSc (hc), FDS, FFGDP, FFD, FKC, is honorary Professor of Dentistry at King’s College London, where he was Professor of Restorative Dentistry and Dean and Head of the College’s internationally renowned Dental Institute between 2001 and 2012, and Deputy Vice Principal (Health) between 2009 and 2012. His many research focus is on bonding to dental structures, composites, and ceramics.

LONG-TERM DURABILITY OF CURRENT ADHESIVES

Presentation abstract: The aim of this presentation will be to present an overview of the long-term durability of current adhesives. The durability of adhesives can be considered from two perspectives: their performance during the clinical service of the restoration and their performance thereafter. The first aspect is the bond durability, which can be considered in terms of bond durability and stability of the adhesive interface, will be presented. The second aspect is the durability of the restoration, which will be divided into two parts: the influence of the different degrading phenomena affecting the stability of the hybrid layer and the influence of the different adhesives systems and composites on the clinical performance of the restoration. The lecture will try to clarify mechanisms that determine bond stability and the role of the different degrading phenomena affecting the stability of the hybrid layer. They include: 1) increasing the degree of conversion of adhesives; 2) the use of inhibitors of dentin endogenous collagenolytic enzymes; 3) the use of cross-linking agents for silencing the activities of dentin endogenous collagenolytic enzymes; 4) “ethanol wet bonding”; 5) biomimetic remineralization of the water-filled domains of the hybrid layer. Finally, some clinical tips to allow obtaining the highest performances, in terms of bond durability and stability of the adhesive interface, will be presented.

Speaker Bio: Silvano Di Giuseppe, DDS, MS, PhD, is Associate Professor and Chair, Division of Restorative Sciences, Ostrow School of Dentistry of University of Southern California. He is the editor-in-chief of Quintessence of Dental Technology (QDT), serves on the editorial boards of other journals, and has lectured and published nationally and internationally on esthetic dentistry and adhesion. He has been involved in teaching cutting-edge clinical techniques and technologies related to esthetic and adhesive dentistry. Dr. Di Giuseppe’s scientific work has been supported by governmental and commercial grants and he serves as a consultant for several manufacturers. His research focus is on bonding to dental structures, composites, and ceramics.
MULTI-MODE ADHESIVES: CLINICAL AND LABORATORY RESEARCH

Presentation abstract: Most multi-mode adhesives can be used as 'etch-and-rinse' or as self-etch adhesive. These bonding materials have been recently introduced with only short-term clinical data backing their use. These new adhesives may bond to tooth structure through hybridization or chemical bonding, as they contain a phosphate monomer known by its chemical adhesion to hydroxyapatite. This presentation will discuss in vitro and clinical results associated with the new multi-mode adhesives, as well potential clinical shortcomings.

Speaker Bio: Jorge Perdigão, DMD, MS, PhD, received his DMD degree from the University of Lisbon, Portugal, in 1985. In 1992, he earned a Master’s degree in Operative Dentistry from the University of Iowa, and in 1993, he received a Certificate degree in Operative Dentistry from there as well. In 1993, he earned his PhD in Dental Materials at the Catholic University of Leuven, Belgium. His academic career started at the University of Lisbon, Portugal. Dr. Perdigão served as an Associate Professor of Operative Dentistry at the University of North Carolina at Chapel Hill from 1996 to 1999, and is now Full Professor of Operative Dentistry at the University of Minnesota. He is involved in research of new dental materials mainly in the area of dentin bonding and new composite resins. Dr. Perdigão is Associate Editor of The Journal of Adhesive Dentistry and Section Editor of Operative Dentistry in the Journal of Esthetic and Restorative Dentistry. He served as member of the Editorial Board of the Journal of Dental Research from 2009-2011, and is currently a member of the Editorial Board of the American Journal of Dentistry and the Italian Journal of Operative Dentistry.

IMPROVED BOND DURABILITY USING A SELF-ETCH APPROACH

Presentation abstract: Current dental adhesive technology allows either an ‘etch-and-rinse’ or ‘self-etch’ approach. Today, enamel still requires phosphoric-acid etching to obtain a durable bond. Although functional monomers in self-etch adhesives are designed to chemically interact with hydroxyapatite (HAp), the structure, size, and orientation of enamel HAp-crystals appear to provide insufficient chemical bonding sites to achieve durable bonding to enamel. Sufficient micro-mechanical interlocking provided by the ‘etch-and-rinse’ step remains primarily needed. At dentin, phosphoric acid may today be less preferred, as the adhesives are generally not capable to envelop the exposed collagen tight enough, so to make the relatively thick hybrid layer resistant to hydrolytic and enzymatic degradation processes. ‘Ethanol wet-bonding’ and ‘biomimetic repair’ by remineralization of etch-and-rinse hybrid layers have proven to be effective. However, these techniques are rather time-consuming, which makes their applicability questionable for routine clinical practice. Also, the use of MMP inhibitors, to be applied separately or mixed with the primer/adhesive, appeared to retard rather than prevent bond degradation. Another strategy in search for durable bonding to dentin involves chemical interaction of functional monomers with HAp. This lecture will focus primarily on the most recent findings on molecular interaction of diverse functional monomers with HAp and on a new interface nanoscale phenomenon, termed as “nano-layering,” both studied using diverse ultra-morphologic and chemical analytic techniques. In addition, the findings of extensive meta-analytic reviews on both laboratory and clinical effectiveness of dental adhesives will be presented in order to answer the important question if clinical effectiveness can be predicted in the laboratory.

Speaker Bio: Bart Van Meerbeek, DDS, PhD, obtained his DDS in 1988 and his PhD in 1993 at KU Leuven (University of Leuven) in Belgium. He continued his research activity abroad during one year at the University of Texas Health Science Center at San Antonio, Texas, and later at the University of Missouri-Kansas City. In 1995, he became Assistant Professor (‘Docent’) at KU Leuven, and since then, teaches Biomedical Sciences. In 1998 and 2002, he was promoted respectively to Associate Professor (‘Hoofddocent’) and Professor (‘Hoogleraar’), and in 2005, to Full Professor (‘Gewoon Hoogleraar’). His primary research interest involves studies related to the adhesion of restorative materials to tooth tissue. In 2003, he became holder of the Toashi Nakao Chair for Adhesive Dentistry. He was President of the Pan-European-Federation of the International Association of Dental Research (IADR) in 2006-2007, and is currently Secretary of the Continental-European-Division of IADR (CED-IADR). Since 2004, he is co-Editor-in-Chief of The Journal of Adhesive Dentistry.

DENTIN BONDING: WHAT IS THE WEAKEST LINK?

Presentation abstract: The development of new dentin bonding systems has promoted great advances in adhesive dentistry and changes in direct and indirect adhesive restorative procedures. Despite these advances, the durability of bonded restorations remains uncertain. There are many intrinsic and extrinsic factors that affect bonding. Dentin permeability, morphology, wetness and depth, pulpal pressure, and regional difference, hybrid layer degradation are important factors which affect dentin bonding. In addition, physicochemical properties of the adhesive and resin composite, contamination during the bonding process, and external stresses may negatively affect the quality and durability of the bonded restoration. This presentation will review different structures of the dentin/adhesive/composite interfaces and relate to clinical long-term successful and unsuccessful outcomes of adhesive restorations.

Speaker Bio: Patricia Pereira, DDS, PhD, received her DDS degree from the University of the Planalto Central, Brasilia, Brazil, and a PhD degree in Operative Dentistry from Tokyo Medical and Dental University (TMDU). Japan. She also spent two years as a Postdoctoral Fellow in the same department at TMDU. Dr. Pereira has taught at the University of North Carolina at Chapel Hill and is currently a Professor at the Dental School, University of Brasilia, Brazil. Dr. Pereira is actively involved in dental materials research, in the area of adhesive and esthetic dentistry, involving direct and indirect adhesive procedures. She also maintains extramural practice, and is co-owner of the CE institute named Integrato. Dr. Pereira is a member of various professional national and international organizations, and serves on editorial boards of international journals. She has also published over 80 journal articles and presented many scientific papers and continuing education courses, both nationally and internationally.
Session III – Update and Future of Dental Adhesion

FUTURE ASPECTS CONCERNING DURABILITY OF DENTIN BONDING

Presentation abstract: Adhesive dentistry is becoming one of the important fields of dentistry. Since 1990s, the developments of new adhesive technologies have made it possible to create short-term strong bonds between tooth and adhesive resin. Current interest of the research for tooth adhesion is the durability of dentin bonding which can be a potential “Achilles heel” of adhesive dentistry. Clinically, considering the durability of dentin bonding, two important factors should be focused on: operator variability/technique sensitivity and pre-installed defect created by the dentin adhesives. Reported clinical success rates of bonded restorations are increasing but not enough. Some of the restorations tend to fail relatively in the short term. The short-term failure seems to occur by early “Infant Mortality Failure” which it is called in the field of reliability engineering. Wear-out failures in the field should correspond to failures induced by the pre-installed defect at the adhesive interface over time. The durability of dentin bonding is still challenging and should be multifactorial. I am hoping to discuss future aspects of durability of dentin bonding, focusing on the factors affecting the failures.

Speaker Bio: Hidehiko Sano, DDS, PhD, is Professor of Hokkaido University Graduate School of Dentistry, Department of Oral Health Science (2000-present). His other credentials and appointments include: Hospital Staff of Tokyo Medical and Dental University, Department of Operative Dentistry (1987-1988); Instructor of Tokyo Medical and Dental University, Department of Operative Dentistry (1988-1995); Lecturer of Tokyo Medical and Dental University, Department of Operative Dentistry (1995-1997); Professor of Hokkaido University, Department of Operative Dentistry (1997-2000); and Professor of Hokkaido University, Division of Oral Rehabilitation (1998-present). He is widely published with 188 English publications, including Fu, J., Pan, F., Kakuda, S., Sidhu, S.K., Ikeda, T., Nakao, Y., Selimovic, D., Sano, H. The effect of air blowing duration on air-induced enamel demineralization. Dent Mater 2012;31(6):1075-1078. He presented the keynote address, “Durability of Bonds,” at the 86th IADR, Toronto, Canada in 2008 and more than 59 overseas lectures.

DIMINISHING NANOLEAKAGE AT THE BONDING INTERFACE OF COMPOSITE RESIN AND DENTIN

Presentation abstract: The objective was to evaluate the effect of high-pressure air blowing during adhesive application on the resin infiltration and nanoleakage of an etch-and-rinse adhesive system to dentin. An etch-and-rinse adhesive system (Single Bond 2) was bonded to dentin surface under simulated pulpal pressure. In the control group, the adhesive was thinned by ordinary air blowing with a pressure of 0.2 Mpa for 5 sec and bonded as the manufacture’s instruction. In the experimental group, a high-pressure air blowing technique (air blowing with a pressure of 0.4 Mpa for 5 sec) during adhesive application was used. All the other procedures were the same as those in the control group. Resin tag formation and nanoleakage at the bonding interface were evaluated with scanning electron microscopy (SEM) and transmission electron microscopy (TEM).

Longer and more homogeneous resin tags were formed when the adhesive was air thinned with high-pressure air blowing. In nanoleakage evaluation, silver deposits could barely be identified from the adhesive/dentin interface when the infiltration of adhesive resin was driven with high pressure air-blowing. Conclusions: High-pressure blowing technique could facilitate the resin monomer infiltration into the demineralized dentin in the single bond 2 adhesive/dentin bonding interface. It is a feasible method to eliminate nanoleakage in the dentin hybrid layer. Clinical Significance: Air thinning of adhesive with high-pressure air blowing provides a clinically possible adjunctive procedure for better resin infiltration in the single bond 2 etch-and-rinse adhesive system.

Speaker Bio: Ji-hua Chen, PhD, DDS, is the Vice Dean of School of Stomatology, Fourth Military Medical University (FMMU), and also the Chair of the Department of Prosthodontics. He is a member of the executive council of the Chinese Stomatological Association. He is the Editor of The Journal of Adhesive Dentistry and Journal of Oral Rehabilitation, the Vice Chief Editor of Asian Pacific Journal of Dentistry, and has been listed in the editorial board of the International Dental Journal, SA, Journal of Oral Science and six Chinese professional journals. He is also the reviewer for 8 SCI journals. For a long time, Prof. Chen has carried out a series of studies on the stability of resin-dentin bonds and has published over 40 papers in international SCI journals in the last five years and is named as an inventor in six Chinese patents. He was President of the 3rd International Congress on Adhesive Dentistry.

NANO-CHEMICALIZATION OF REINFORCED ENAMEL AND DENTIN BY SELF-ETCH ADHESIVES: SUPER TOOTH FORMATION

Presentation abstract: In recent years, bonding to tooth substrates with self-etch adhesive (SEA) systems has gained popularity. Because these systems contain specific acidic monomers to condition and prime tooth substrates simultaneously, separate etching and water-rinsing steps are eliminated, reducing the application procedures and technique sensitivity. Furthermore, it has been shown that some functional monomers in SEA can chemically interact with the hydroxyapatite in the tooth demineralized layer within a clinically manageable time. Hypothetically, this chemical interaction can improve the bonding performance and degradation resistance of the bonding interface. The acid-base resistant zone (ABRZ), a structural layer formed on the tooth bonding interface, has been confirmed. Because this layer can resist acid and base challenges, it might play an important role in the prevention of secondary caries. Morphology of dentin ABRZ was highly adhesive-material dependent. The dentin ABRZ was formed in SEA systems but not in acid etch adhesive systems. Recently, the formation of enamel ABRZ was also found with a two-step SEA system, containing 10-methacryloxydecyl dihydrogen phosphate (MDP) as the acidic monomer. It was proposed that the diffusion of the acidic monomers beyond the classic interface could result in formation of stable organic-inorganic complexes in ion-exchange interactions with the available hydroxyapatite, and that the structures should be termed “super tooth,” as it would in concept withstand major causes of destruction of the dental tissue. The recent findings on the ultra-morphological characteristics of super enamel and super dentin are presented in this lecture.

Speaker Bio: Toru Nikaido, DDS, PhD, graduated from Hokkaido University in 1985 and received his PhD from Tokyo Medical and Dental University in 1990 (under supervision of Professor Dr. Norio Nakabayashi). He is now Senior Lecturer in Cariology and Operative Dentistry, Oral Restitution Department, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University. His research topics cover basic and clinical aspects of Adhesive Dentistry, Operative Dentistry and Preventive Dentistry. He is on the editorial board of Dental Materials Journal, and The Journal of Adhesive Dentistry, and is Associate Editor for Asian Pacific Journal of Dentistry. He was Visiting Professor of State University of Campinas, Brazil in 2003 and Chulalongkorn University, Thailand in 2008. He published more than 100 peer-reviewed articles.
RELATIVE CONTRIBUTIONS OF MMPs VERSUS CATHEPSIN K TO DENTIN COLLAGEN DEGRADATION

Presentation abstract: The poor durability of resin-dentin bonds is thought to be due to the acid-etching step in bonding procedures that uncoverts and activates endogenous dentin proteases in the demineralized dentin matrix. These include matrix metalloproteinases (MMPs 2, 8, 9 and 20). In addition, acid etching also uncoverts and activates cysteine cathepsins B, L and K. The relative contribution of MMPs vs. cathepsins can be determined by measuring the total loss of dry mass of demineralized dentin over time and by measuring specific telopeptide fragments in the incubation medium. Only MMPs produce C2 telopeptide fragments. Only cathepsin K produces CTX telopeptide fragments. Our work shows that MMP activity in dentin is usually greater than cathepsin K activity and that both proteases can be inhibited by S, N-MDP, an antimicrobial monomer in Clearfil Protect SE self-etching primer/adhesive system.

Speaker Bio: David Pashley, BS, DMD, PhD, earned a DMD degree from the Oregon Health Sciences University in 1964 and a PhD in physiology from the University of Rochester School of Medicine and Dentistry in 1970. That same year, he joined the faculty at the Medical College of Georgia as an Assistant Professor, rising through the academic ranks to Regents’ Professor (1987) present) of Oral Biology in the School of Dentistry and Professor of Physiology and Endocrinology in the School of Medicine, Medical College of Georgia. His research interests include pulp biology, the structure and function of dentin, dentin sensitivity and its treatment, dentin bonding, the mechanical properties of dentin and their modification, adhesive dentistry, and enamel and dentin bonding. His research activities have been supported by the NIH/CR since 1973. Dr. Pashley has published over 600 papers in peer-reviewed journals about two-thirds of which deal with the structure and function of dentin. He has held various offices in the Pulp Biology Group of the IADR and received the Pulp Biology Research Award (one of the IADR Distinguished Scientist Awards) in 1990 for his research contributions to the field of pulp biology. He received the Hollenbach Award from the Academy of Operative Dentistry in 1998. In 2001, he received the Wilmer Souder Award (another of the IADR Distinguished Scientist Awards) for his work in dental materials.

GLOBAL EFFECTS TO STANDARDIZE THE BOND STRENGTH TEST FOR DENTAL ADHESION IN ISO/TC106

Presentation abstract: The importance of dental adhesion is increasing so that today’s dental treatment cannot be done without dental adhesive materials. It is therefore very important to standardize the adhesion test methods to tooth structure internationally. Adhesion test methods currently documented by ISO (International Standardization Organization) are not a standard, but a technical specification (ISO/TS 11405:2003: Dental Materials – Testing of adhesion to tooth structure). The consensus level of TS is regarded as lower than the standard. Adhesion test methods for tooth structure were documented by ISO for the first time in 1994 as a technical report (TR). The TR was the report which collected the various data about dental adhesion test methods. Then, the TR was promoted to TS in 2003, where the tensile bond tests listed are “Kemper and Killian test,” “Bencor test,” “Dumb-bell test,” and “Micro tensile test,” and the shear bond tests listed are “Noguchi test,” “Watanabe test,” and ”Shear test” according to ISO 10477:1992/AM 1A.” “Fracture toughness test” is also listed. If standardization of the adhesion test methods is carried out internationally, it becomes possible to do the direct comparison of the bond strength values reported by various laboratories in the world, like compressive strength, flexural strength, and hardness number and so on. This will definitely bring a great benefit to researchers, clinicians, and manufactures. This presentation will address the task undertaken to upgrade the shear bond test in TS to ISO standard, which will follow upadating of the tensile bond test.

Speaker Bio: Yasuko Momoi, DMD, PhD, is currently a Professor, Department of Operative Dentistry, Tsunumi University School of Dental Medicine, Yokohama, Japan. In 1976, she graduated from Tsunumi University School of Dental Medicine. She has served as an Assistant Professor from 1976 to 1982 and was promoted to lecturer in 1983. From 1999 to 2002, she visitied the Dental Materials Science Unit, The Dental School, University of Newcastle upon Tyne, U.K. and was involved in the dental materials research under the direction of Prof. J. F. McCabe. In 2003, she was appointed Professor, Department of Operative Dentistry. She is now President of the Japan Society for Adhesive Dentistry, an executive member of Japanese Association of Conservative Dentistry, and expert of the ISO/TC 106. Her research interests are dental materials and clinical pathology.
Evidence-based dentistry requires that clinical trials be short-term (1-5 years) with longer ones (5-20 years) to reveal key differences. Current clinical trials tend to be short-term (1-5 years) when longer ones are needed (5-20 years) to reveal key problems. Costs and logistics for conducting long-term trials prevent most from ever being done. Long-term trials in any form are very expensive. Major factors involved in clinical research outcomes are (a) operator variables, (b) cavity designs, (c) restorative materials, (d) intraoral location, and (e) patient variables. Most risks affected outcomes are associated with operators. Materials problems are less prevalent and generally do not reveal key differences until well beyond 5 years. A different approach to clinical trials is now being considered. Previous restorative clinical research trials are predominantly tied to USPHS formats and evaluation systems. These are not formal RCTs, but rather trials linked to standards and not controls. This creates a challenge for dentistry because of new publication hurdles to comply with CONSORT requirements. More importantly, restorative dentistry needs trials that can provide feedback quickly on potential problems. This presentation proposes a new two-year clinical research format that is very different than standard designs and which maximizes risks for failure.

PROPOSAL FOR NEW CLINICAL RESEARCH TRIAL DESIGN FOR COMPOSITES

Presentation abstract: Evidence-based dentistry requires substantially more and better clinical research trials. There are new standards for clinical research management (public registration) and reporting (CONSORT and PRISMA). Less than 10% of the evidence base for dentistry is substantiated by well-done clinical research. Restorative dental materials and their bonding systems require more revealing longitudinal clinical research approaches. Current clinical trials tend to be short-term (1-5 years) when longer ones are needed (5-20 years) to reveal key problems. Costs and logistics for conducting long-term trials prevent most from ever being done. Long-term trials in any form are very expensive. Major factors involved in clinical research outcomes are (a) operator variables, (b) cavity designs, (c) restorative materials, (d) intraoral location, and (e) patient variables. Most risks affected outcomes are associated with operators. Materials problems are less prevalent and generally do not reveal key differences until well beyond 5 years. A different approach to clinical trials is now being considered. Previous restorative clinical research trials are predominantly tied to USPHS formats and evaluation systems. These are not formal RCTs, but rather trials linked to standards and not controls. This creates a challenge for dentistry because of new publication hurdles to comply with CONSORT requirements. More importantly, restorative dentistry needs trials that can provide feedback quickly on potential problems. This presentation proposes a new two-year clinical research format that is very different than standard designs and which maximizes risks for failure.

Speaker Bio: Stephen Bayne, MS, PhD, FADM, is Professor and Chair of the Department of Operative Dentistry and Periodontology, University of Regensburg. His credentials and other appointments include: 1971, State Board (DDS), University of Bonn; 1972, Doctor Med Dent Degree (DDM), University of Bonn; 1974-97, Research Associate at the “Material Science Toxicology Laboratory,” University of Memphis, Tenn., USA; 1980, Habilitation (PhD), University of Tübingen. Subject: “The Biocompatibility of Bis-GMA.” 1989-2012, Dean of the Dental School, University of Regensburg; 1989-1989, President of the Continental European Division of IADR since 1989-1990, Secretary (Treasurer until 2008) of the Continental European Division; since 1996, Editor-in-Chief of Clinical Oral Investigations; since 1998, Adjunct Professor, University of Texas at Houston; since 2008, Honorary Professor University “Iuliu Hatieganu” Cluj-Napoca (Klausenburg), Romania; 2007, Distinguished Scientist Award of the International Association for Dental Research; 2011, Distinguished Service Award of the International Association for Dental Research; 2011, Award of Excellence of the European Federation of Conservative Dentistry (EFCID). His main research areas are biocompatibility of dental materials and regenerative dentistry.
RESIDUAL STRESSES OF VARIOUS DENTAL COMPOSITES

Presentation abstract: During the polymerization of dental composite, shrinkage stress is developed and affects the bonding surface. Also, the internal residual stress is developed and it influences the mechanical properties and clinical performance of the restoration. Residual stress (RS) has been defined as "a stress which exists in the bulk of a material without application of an external load (including gravity) or other source of stress, such as a thermal gradient." The amount of this stress is smaller than polymerization shrinkage stress, and it can have an effect on the fracture behavior and restoration failure. There are several methods to measure the residual stress, and we modified the ring slitting method to measure the RS of composites. To compare the RS of various composite materials, we compared the RS of conventional and nanofiller containing composites, compomer, dual-cure core composite, conventional resin cement, and self-adhesive resin cement. Also, we measured the RS, elastic modulus, water sorption, and solubility of several conventional and self-adhesive resin cements to evaluate the effect of hydrophilicity on RS.

Speaker Bio: Dr. Jeong-won Park is a graduate of Yonsei University College of Dentistry. His credentials and appointments include: Clinical Researcher in Samsung Medical Center Department of Conservative Dentistry; Associate Professor at Kyungpook National University; Visiting Professor at Oregon Health and Science University; Professor at Yonsei University; and a member of the Korean Academy of Conservative Dentistry.

Session II – Composite Resin Update

RESIN COMPOSITE CONTRACTION STRESS AND ITS AFFECT ON THE ADHESIVE INTERFACE

Presentation abstract: The setting of resin-based dental composites is accompanied by significant polymerization contraction that results in the generation of stresses within the material and at the tooth-restoration interface. These stresses can have deleterious effects on marginal integrity if they exceed the adhesive strength of the restorative, as well as on the properties of the composite itself. It has been determined that several factors affect these stresses, including the polymerization rate of the composite, its formulation (filler and monomer composition), and the constraints imposed by the geometry of the cavity preparation. New methods for studying these stresses, and their effects on the tooth-restoration interface, include crack analysis and acoustic emission. Studies have shown reduced adhesion to cavity preparation walls in composites in which significant stress was generated during polymerization due to external constraints imposed by the tooth. Another outcome of these interfacial stresses is crack propagation in the bonding substrate near the interface.

Many strategies have been developed to reduce the effect of these stresses. Changes in the formulation of the composite have included the inclusion of stress relieving components, the introduction of new monomers, and the modification of the photoinitiator system. Clinically, modifications to the placement technique have included the use of alteration in the light activation protocol, the use of incremental placement and curing, and the placement of resilient liners. Despite these approaches, stress generation in dental composites continues to demand a careful placement technique to ensure adequate adhesion at the restoration-tooth interface.

Speaker Bio: Jack Ferracane, PhD, is Professor and Chair of Restorative Dentistry, and Division Director of Biomaterials and Biomechanics at Oregon Health & Science University, Portland, Oregon. Dr. Ferracane earned his PhD in Biological Materials at Northwestern University. He is a founding fellow and past-President of the Academy of Dental Materials. He is a past-President of the Dental Materials Group of the IADR, and serves on the editorial board of 10 journals, and is Associate Editor of the Journal of Dental Research and Odontology. He has authored a textbook entitled “Materials in Dentistry: Principles and Applications.” He has published and lectured globally on dental materials. His current research interests are in dental composites and the use of bioactive glasses in resin-based dental materials. He also is actively involved in the establishment and operation of networks designed to conduct dental clinical research in the private practice setting. His research is funded by the NIH/NIDCR as well as private industry.
STRATEGIES FOR PREVENTING GAP FORMATION

Presentation abstract: The fundamental bonding performance of recent adhesive materials is very high and durable. However, in the clinical situation, the gap at the cavity floor is frequently propagated because of the shrinkage stress of composite and weak bond strength of adhesive resin immediately after light irradiation. To reduce the shrinkage stress of composites, non-shrinkage composite have been performed, however, the clinically applicable material is not yet developed. Currently, the incremental filling technique is recommended especially in the case of deep cavities. Though the bulk filling materials with less shrinkage stress are recommended, the gap propagation is confirmed under real time observation with the swept source optical coherent tomography (SS-OCT) during the light irradiation. The application of thin coating with flowable composite is still preferable. The gap formation is often observed between adhesives and composite, probably because of lower conversion of bonding resin surface, which resulted in the lower bonding immediately after irradiation. The contact-cured system, in which the conversion of the bonding resin is increased by the accelerator included in composite resin which is placed onto the bonding resin. Because of the contact cure systems, the bond strength between composite and bonding resin is considered to be promoted to be able to resist to the shrinkage stress of the composite. The SS-OCT is also expected to be a new apparatus for direct and non-invasive evaluation of the restorations in both laboratory studies and in clinic.

Speaker Bio: Junji Tagami, DDS, PhD, received his DDS degree at the Faculty of Dentistry, Tokyo Medical and Dental University in 1980. He obtained his Ph.D. degree under the supervision of Prof. Takao Fusayama and Hiroyasu Hasoda in Dental Science in March 1984. In 1987 and 1988, he studied under Professor David Pasley, Medical College of Georgia. Currently, Dr. Tagami is Dean of the Faculty of Dentistry and Dean of Graduate School at Tokyo Medical and Dental University. His primary research interest involves studies related to the adhesion of restorative materials to tooth substance and dental materials within the broad area of adhesive dentistry and cariology. His research work has been published in more than 300 international and national peer-reviewed journals.

PREDICTABLE USE OF COMPOSITIONS IN ANTERIOR TEETH

Presentation abstract: The lecture will address basic fundamentals for obtaining “excellence” in the use of composites in anterior teeth. The main optical properties of the latest generation composites are depicted. The stratification technique for anterior teeth based in the counter opalescence principle will be based and detailed. An extensive showcase will be presented revealing alternatives for obtaining “excellence” in detail along with key clinical “tips.”

Speaker Bio: Luiz Baratieri, DDS, M.S., PhD, is Professor of Operative Dentistry, Federal University of Santa Catarina. His other credentials include: certification in periodontology; postdoctorate degree, University of Sheffield, England; coordinator, certification program, operative dentistry, Federal University of Santa Catarina; coordinator, graduate program, master of science, operative dentistry, Federal University of Santa Catarina; international lecturer, more than 600 lectures; Editor-in-Chief, Journal Clínica, International Journal of Brazilian Dentistry.
NOVEL STRATEGY FOR DENTIN REMINERALIZATION

Presentation abstract: Recent achievement of a consistently reliable bonding of resin composite to dentin has dramatically changed the clinical practice strategy in restorative dentistry. Comparatively high bond strength of resin composite to dentin has been reported in long-term clinical use. Conversely, for the adhesion of resin composite to carious dentin according to the concept of MI, a resin-free decalcified dentin zone may exist at the base of the hybrid layer as a result of incomplete resin infiltration and inter-connecting water trees may remain in the adhesive interface, causing insufficient polymerization of resin. In both cases, the exposed collagen is susceptible to hydrolytic degradation over a long period, leading to reduction in bond strength. Hence, it is speculated that a rapid induction of remineralization of decalcified collagen is quite effective in improving the long-term durability of resin-dentin bonding. The aim of our study is to enhance the durability of resin-dentin bond interface through the development of adhesive monomers which possess dentin remineralization activity. The remineralization activity will be discussed regarding newly developed adhesive monomer, CMET which is a calcium derivative of 4-MET, for the development of dentin remineralization therapy as a novel strategy for caries treatment.

Speaker Bio: Takashi Saito, DDS, PhD, received a DDS degree in 1990 and PhD degree in Dentistry in 1994 from Health Sciences University of Hokkaido, followed by a postdoctoral fellowship for two years in the laboratory of Prof. Miles A. Crenshaw at the University of North Carolina at Chapel Hill. From 2003 to the present, he has been a Professor and Chair of the Division of Clinical Cariology and Endodontology, Department of Oral Rehabilitation, School of Dentistry, Health Sciences University of Hokkaido, Japan. Currently, he also serves as the Dean. Prof. Saito’s current research activities include the development of new techniques for dentin remineralization using new adhesive monomer and dentin regeneration using RGD-containing peptides. He is the recipient of Hatton Travel Award from IADR in 1999. He is a Director and Board Certified member of Japanese Society of Conservative Dentistry, Japan Society for Adhesive Dentistry, and Japan Academy of Esthetic Dentistry.

BONDING CAPACITY OF LAYERING MATERIALS TO ZIRCONIA FRAMEWORKS

Presentation abstract: Due to their excellent biocompatibility, increased strength, and inherent aesthetic properties, zirconium dioxide (zirconia) ceramics have been used as a framework material for tooth-supported or implant-supported all-ceramic restorations. A number of clinical studies of tooth-supported zirconia-based all-ceramic restorations have confirmed that zirconia ceramics exhibit high stability as a framework material. However, a relatively high rate (6–25%) of chipping and minor fracture of layering porcelain during a 5-year observation period was reported in several clinical studies of zirconia-based all-ceramic fixed partial dentures. Some causal factors for these mechanical issues have been identified in previous studies, and include inappropriate framework design, mismatched thermal properties of veneering porcelain and zirconia ceramics, and the use of incompatible layering porcelains. Consequently, inadequate bond of layering porcelain to the zirconia ceramic framework seems to be a relevant factor for veneer chipping. This presentation will discuss the bonding between zirconia and some layering materials, such as feldspathic porcelain and indirect composite material, for zirconia-based restorations. The program will address the clinical issues of minor chipping or fractures of the layering porcelain.

Speaker Bio: Futoshi Komine, DDS, PhD, is currently Assistant Professor, Department of Fixed Prosthodontics, Nihon University School of Dentistry in Tokyo, Japan. He received his DDS degree in 1991, and his PhD degree in 1995, from Nihon University School of Dentistry. He was Visiting Assistant Professor, Department of Prosthodontics at the University of Freiburg, School of Dentistry in Germany (Chair: Prof. Dr. Jörg Strub) from 2002 to 2004. He is an editorial board member of several recognized journals, including The Journal of Prosthetic Dentistry; Quintessence International; Asian Pacific Journal of Dentistry, and acts as a reviewer for many other scientific dental journals.

Session III – The Resin Bond to Dental Materials

TOOTH-COLORED INLAYS & ONLAYS: CLINICAL AND SCIENTIFIC EVIDENCE

Presentation abstract: The reduction in the carious disease incidence, the growing concern of patients for potential toxicity of metals, and the growing concern for dental aesthetics have called for the profession to develop restorative options adapted to new demands. Composites, ceramics, and adhesive techniques have then become the foundation of modern restorative dentistry, following tremendous improvements in material mechanical performances, wear resistance, and aesthetic potential. Composite resins are currently used in a broad range of situations, including the treatment of initial decays to the restoration of extended and serial cavities, and the aesthetic and functional rehabilitation of patients with severe tooth wear. However, polymerization shrinkage of the resin matrix and in-mouth material application still are crucial issues which impose certain limitations to the use of direct techniques. Therefore, other restorative options such as semidirect and indirect techniques have to be considered for large and deep cavity configurations or non-vital teeth. The lecture will present an overview decision criteria for the treatment of posterior teeth using indirect techniques and will examine as well material choice in consideration to tooth biomechanical status, with special focus on the “cracked tooth syndrome” and non-vital teeth. New, improved concepts related to tooth preparation and cavity lining, as well as luting procedures will be presented, which lead to a simplification of clinical procedures and superior results in indirect restorations.

Speaker Bio: Didier Dietschi, DMD, was licensed in 1984 and got his doctoral and Privat Docent degrees in 1988 and 2004, respectively, at the University of Geneva, Switzerland. He also got a PhD degree in 2003 at the University of ACTA, Netherlands. Following a six-year period of full-time teaching and research activity in Operative Dentistry and Periodontology, he started a part-time activity in a private office in Geneva, dedicated to aesthetic restorative dentistry. He now holds positions of adjunct Professor at CASE Western University (USA) and senior lecturer at the University of Geneva. Dr. Dietschi has published more than 80 clinical and scientific papers and book chapters on adhesive and aesthetic restorations; he also co-authored the book “Adhesive Metal-free Restorations,” edited in 1997 by Quintessence and translated in seven languages. Dr. Dietschi is lecturing internationally on adhesive and aesthetic restorations.
REPAIR OF THE RESTORATIONS WITH DENTAL ADHESIVES

Presentation abstract: The longevity of the dental restorations, which is evaluated by the type and degree of failure in their clinical performance, is dependent on various factors including their retention, anatomic form, marginal integrity, color match, surface texture, postoperative sensitivity, and secondary caries. For many years, dentists had to choose whether to leave the failed restoration unprotected against the damaging effect of the existing problems or to remove and replace it with a new one. Advances in adhesive dentistry enabled the clinicians to rely on a new treatment planning: “the repair of the failed restoration,” which is superior to the replacement with regard to conservation of the dental tissues, as well as being less time-consuming process with a relatively low cost. The repair provides an effective solution to the problems of marginal integrity (gap, splitting of material and/or enamel, marginal discoloration etc.), prevents new caries adjacent to the tooth structure and results in a better esthetic match. Its success is based on the bond strength of the repair material to the old restoration which is influenced by the type of bonding material and surface pretreatment. Additionally, the mechanical property of materials, occlusion, and oral hygiene affect the performance of the repaired restoration. To improve the quality of the repaired restoration and to extend the area of its application against the replacement. Further studies using different materials and methods for the repair and more clinical trials are required.

Speaker Bio: Fatma Koray, DDS, PhD, was born in Istanbul. She graduated Faculty of Dentistry, Istanbul University. She received her PhD degree in Conservative Dentistry. She worked as a research fellow in the Free University, Berlin, and was supported by DAAD (German Academic Exchange Service) and Av Humboldt Foundation. Continuing to work as a clinician and a lecturer, she was promoted to Professor in the Department of Conservative Dentistry in 1982, where she worked as the Head of the Department for 22 years; she retired in 2012. She was an Executive Committee member of the Institute of Experimental Medicine, Istanbul University. She was elected Senator as a representative of the Faculty, and appointed as the Director of the Clinical Division. She founded the Turkish Association of Regenerative Dentistry, and worked as president starting in 1990. She was elected President of IADR/ Continental European Division in 2003-2004 and EFCD European Federation of Conservative Dentistry in 2011-2012.

INTERFACIAL ADHESION BETWEEN ADHESIVE RESIN AND ROOT CANAL DENTIN

Presentation abstract: Endodontically treated teeth, even in severe cases resulting from a large amount of tooth destruction, can be treated by post and core buildups prior to the definitive crown and bridge restoration. There are two different buildup techniques, namely the indirect cast metal post and core restoration and the direct prefabricated post and resin core restoration. Currently, the resin core buildup method using a fiber-reinforced post with resin core materials is increasingly used for the restoration of endodontically treated teeth because of its lower risk of root fractures and higher esthetics of prostheses at gingival margins. In addition, adhesive resin with a high degree of clinical reliability regarding adhesion to root dentin is considered effective in improving the long-term success of cores and prostheses for endodontically treated teeth. However, in many long-term follow-up studies regarding resin core restorations the most commonly reported cause of failure is dislodgment, suggesting that the technique of resin core buildups needs to be still improved. Most failures occur at the interface between dentin and resin core materials. However, a detailed observation of the interface between dentin and adhesives inside the root canal has been scarcely performed. The purpose of this presentation is to evaluate the interface adhesion of resin to root canal dentin in a direct resin core build-up method in terms of microtensile bond strengths, SEM, TEM, EDX, μCT images, optical coherence tomography, and video tape recordings of the root canal, and to seek an appropriate resin core buildup method based on the evaluation.

Speaker Bio: Hirofumi Yatani, DDS, PhD, is Professor and Chair, Department of Fixed Prosthodontics, Osaka University Graduate School of Dentistry. He holds a DDS from Osaka University School of Dentistry (1980) and a PhD from Hiroshima University Graduate School of Dentistry (1985). His teaching and research appointments include: 1984-1985, Research Assistant, Hiroshima University School of Dentistry; 1985-1986, Assistant Professor, Okayama University School of Dentistry; 1987-1999, Associate Professor, Okayama University School of Dentistry; 1995-1997, Fellow of Orofacial Pain Center, University of Kentucky College of Dentistry; 2000, Professor and Chair, Okayama University School of Dentistry; and 2003-present, Professor and Chair, Osaka University Graduate School of Dentistry. Dr. Yatani is Fellow, President, Japan Prosthodontic Society; Fellow, Japan Society for Adhesive Dentistry; Fellow, Japanese Society for Temporomandibular Joint; Member, International College of Prosthodontists; Member, International Association for Dental Research (IADR); Member, International Association for the Study of Pain; Country Representative Asian Academy of Craniomandibular Disorders; and Vice President, Asian Academy of Prosthodontics.
Outcome of endodontic treatment

In today's prosthetic restorative procedure, notes journals, has given over 401 presentations at international scientific meetings. 2007-present. She has authored more than 200 scientific articles in peer-reviewed centers.

Dr. Mutlu Özcan, DDS, PhD, is Professor and Head of Dental Materials Unit (University of Zurich, Dental School, Zurich, Switzerland), 2009-present. Her credentials and other appointments include: Lecturer in Dentistry (DDS, Marmara University, Istanbul); 1993; Dr.med.dent. (Medical and Dental School of Cologne, Germany), 1999; invited Visiting Researcher (University of Turku, Dental School, Department of Prosthetic Dentistry and Biomaterial Research, Turku, Finland); 2001-2002; PhD (University of Groningen, Department of Dentistry and Dental Hygiene, The Netherlands), 2003; Professor of Clinical Dental Biomaterials (University Medical Center Groningen, Department of Dentistry and Dental Hygiene, The Netherlands), 2007-present. She has authored more than 200 scientific articles in peer-reviewed journals, has given over 401 presentations at international scientific meetings.

Speaker Bio: Mutlu Özcan, DDS, PhD, is Professor and Head of Dental Materials Unit (University of Zurich, Dental School, Zurich, Switzerland).

Session IV – The Resin Bond to Dental Materials

Bonding of Fiber Post: The Challenges and Solutions

Presentation abstract: Outcome of endodontic treatment has become much more predictable as a result of improved instrument, equipment, and technique. Different post and core materials have been used to restore the endodontically treated teeth that, in many cases, are badly broken down. The use of fiber post has become popular over recent years. The clinician must take careful steps in the clinical procedure to ensure successful bonding of the fiber post in the root canal.

Speaker Bio: William Cheung, DMD, FAGD, FADI, FICD, received his dental degree and Certificate in General Practice Residency from the University of Pennsylvania School of Dental Medicine, USA. He is Fellow of the Academy of General Dentistry, the Academy of Dentistry International, and the International College of Dentists. He maintains a multi-specialty practice in Hong Kong. He is Honorary Professor, West China School of Stomatology, Sichuan University in China; Honorary Associate Professor at the University of Hong Kong Faculty of Dentistry; and Adjunct Associate Professor at the University of Pennsylvania School of Dental Medicine. He is also the Continuing Education Programme Director in Asia Pacific for the FDI World Dental Federation. Dr. Cheung has lectured internationally. He serves on the International Editorial Board of the Journal of the American Dental Association (JADA), Associate Editor of JADA Chinese Edition, and Associate Editor of Hong Kong Dental Journal.

Adhesion to Ceramics: Technical and Clinical Parameters

Presentation abstract: Durable adhesion of glassy matrix or oxide-based ceramics is crucial especially for minimally invasive reconstructions. This lecture will highlight the fundamental principles of adhesion to different ceramics, cover current knowledge and the clinical protocols regarding to surface conditioning methods and adhesion promoters to be used in conjunction with different resin-based materials.

Speaker Bio: William Cheung, DMD, FAGD, FADI, FICD.

Past << Future – A Challenge to Natural Teeth

Presentation abstract: In today’s prosthetic restorative procedure, it would not be an understatement to say that it is no longer acceptable to have a final product that is not esthetically pleasing. Regardless of the situation of the restorative procedure, esthetic treatment should be the first factor and is now an absolute necessity. Our work is just a mere part of the treatment procedure, but I believe the responsibility is nonetheless a great one. Today, there are many esthetic treatment options available in the market. In any given clinical case, if we can select the optimal treatment, I am confident that the final outcome will be more pleasing.

Moreover, in reality, patients may not ask for the most ideal treatment. Therefore, we technicians must provide the highest quality work possible within the treatment selection that the patient agreed upon. In order to carry this out, the important factors are mutual communication between dentists, technicians, and patients, and proper material selection by keeping up with the numerous new-age technologies and materials. Ideal esthetic treatment would be something that looks esthetically pleasing in the patient’s mouth without any excessive standout statements. It may reside in the patient’s mouth rather subtly from a third person’s point of view, but I believe that a beautiful restoration would nonetheless have a dramatic impact on the patient. In my lecture, I will go over the details on how to properly communicate between patient, dentist, and technician and aim for the same goal through the clinical diagnosis to the completion of the final restoration seating.

Speaker Bio: Naoki Hayashi, RDT, graduated from Japan Osaka Dental University in 1992. Soon after graduation he worked in the National Dental Laboratory in Japan. He works currently as a master ceramist and Vice President of Ultimate Styles Dental Laboratory in Irvine, CA. Mr. Hayashi lectures all over the world about current trends in dental technology and treatment planning. He has lectured in QDT Symposium in 5th & 6th World Dental meeting in Japan, 4th International Congress of Dental Technology in Japan, Spectrum Dialogue Techno Clinical Day in Chicago, AADC Boston, AADG Florida, 5th International Symposium on Ceramics, and many more. He is also an instructor for Waseda Ceramic training center & Nontake dental supply company. Mr. Hayashi authored, A Diary Through the Lens, published by Ishiyaku Publishing Inc. In addition, he also has published over 30 articles and several of his articles are translated in nine languages.
Poster Presentations

Poster presentations of the following studies will be displayed throughout the Congress.

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006 Antimicrobial Activity and Dentin Bond Strength of Adhesive Systems. Andre C.B., Gomes B.P.F.A., Mageste T., Stipp R.N., Chan D.C., Giannini M.*
007 Microleakage-free Restorations to Dentin: our Goal in Adhesive Dentistry. Nakabayashi N.
008 Bond Strengths of Self-etch Adhesives to Acid-exposed Dentin. Rikuta A.*, Yoshida F., Furuchi T.,
009 Effects of Phosphoric Acid Etching on Fatigue of Self-etch Adhesives. Takamizawa T.*, Barkmeier W.W.,
010 Bond Strength of Newly Developed One-step Adhesive System. Hanabusa M.*, Akimoto N., Momoi Y.
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012 Bond Strengths and Microleakage of Composites Bonded with Novel Adhesive. Siso S.H., Bayrak I.*, Donmez N.
013 Bond Strengths of Two New Self-etch Adhesives Containing MDP. Yesilyurt C.*, Alp C.K., Akgon M.S., Yildirim T.
014 The Role of MDP in Two-step Self-etching Bonding Agent. Matsui N.*, Takagaki T., Nikaido T., Ichinose S.,
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026 Microleakage-free Restorations to Dentin: our Goal in Adhesive Dentistry. Nakabayashi N.
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070 Influence of Light on Bonding Performance of Dual-cure Resin Cements. Ozer F.*, Kashyap K., Yaman B., Mante F., Blatz M.B.

071 Bond Strength of Adhesives to Mineral Trioxide Aggregate. Seo M.S.*, Choi M.L.

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073 Bond Strength of Adhesives to Mineral Trioxide Aggregate. Seo M.S.*, Choi M.L.

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