

## On top of trends in dental research: IADR 2009

Miami, Florida (USA) was the beautiful venue of the biggest and most important international scientific dental congress: The 87th General Session of the International Association of Dental Research (IADR). From April 1-4, 2009, Miami Beach was crowded by approximately 5,000 dental researchers from all over the world. As every year Heraeus was part of this huge event.

Since dental research is vitally important for the product development in a company like Heraeus, we are proud of having had the opportunity to stimulate the knowledge transfer between universities and research institutes by becoming one of the Scientific Session Sponsors.



Christian Kasperek and Dr. Andreas Utterodt at the IADR

Learning the newest developments in dental materials and dental treatment techniques at first hand from the experts is one goal of Heraeus. On the other hand, we utilised this platform actively to show our most recent internal research findings on our newest composite Venus Diamond®:

Dr. Andreas Utterodt, the responsible R&D-manager for the development of our dental composites, presented

“Evaluation of compatibility of a new nano-hybrid composite to adhesives”.



Dr. Andreas Utterodt explaining his research

Most manufacturers are using Bis-GMA as matrix for their low-shrinkage dental composites. This base material is known as extremely viscous. Making it workable requires the addition of a reactive thinner, which once again increases shrinkage. This is a problem that the new generation of composites from Heraeus tackles with its innovative monomer base material: the Tricyclodecane-Urethane Monomer.

Analysis of variance  
(per adhesive and composite)

	Venus Diamond				Venus			
	Dentine		Enamel		Dentine		Enamel	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
iBOND Self Etch	37.0 <sup>b</sup>	3.8	32.5 <sup>a,b</sup>	7.9	32.7 <sup>b</sup>	4.7	27.6 <sup>a</sup>	3.7
Gluma Comfort Bond + Des.	35.8 <sup>b</sup>	6.0	33.9 <sup>a,b</sup>	7.5	32.8 <sup>b</sup>	8.4	35.7 <sup>b</sup>	8.6
Adper Scotchbond	29.8 <sup>a,b</sup>	7.9	33.3 <sup>a,b</sup>	12.3	30.3 <sup>a,b</sup>	7.8	38.0 <sup>b</sup>	6.6
Clearfil SE Bond	26.7 <sup>a</sup>	3.5	25.4 <sup>a</sup>	8.3	23.6 <sup>a</sup>	5.4	25.2 <sup>a</sup>	4.2
Prime & Bond NT	27.2 <sup>a,b</sup>	10.0	36.5 <sup>b</sup>	10.8	27.0 <sup>a,b</sup>	6.6	35.8 <sup>b</sup>	5.2

Different letters show statistical significant discrepancies in every column (p = 0.05). No statistical significant distinctions in SBS of the different adhesives were found between both composites

Therefore, this investigation was intended to show the compatibility of the TCD-Urethane based Venus Diamond composite to different conventional adhesive systems.

The interoperability was tested by the determination of the shear bond strength to human dentine and enamel. This in vitro test showed that Venus Diamond is compatible to the tested adhesive systems like the well established Venus® composite.

Not only internal research results were shown in Miami. Furthermore, promising external evaluation of Heraeus products was displayed by different universities also:

For example, Dr Francesca Cerutti of the University of Brescia (Italy) performed some research on Venus Diamond: "Relevance Of Different Polymerisation Methods On Light-curing Composites Conversion Degree". She found significant differences between the tested time/power combinations. Based on her research she drew the conclusion that TCD-DI-HEA-based composite (Venus Diamond) reaches "remarkably high DCs".

The study group around Professor Carlos Munoz from the State University of New York at Buffalo (USA) showed the two-year results of the clinical trial with Venus and NEUN (project name for Venus Diamond): "Two Year Clinical Evaluation of a Nano-hybrid Composite Resin on Class I and II Restorations". At the two-year recall

restorations Venus and Venus Diamond were comparable. Venus Diamond showed a "high level of clinical performance... as a posterior restorative material".

The six-month results of the clinical evaluation of iBOND® Self Etch ("iBOND Self Etch, A Six-month Clinical Evaluation") were demonstrated by Dr Sean Lee from the Loma Linda University School of Dentistry (USA). He found out that the clinical performance of iBOND Self Etch and Gluma® Comfort Bond + Desensitizer are comparable after six months in situ. iBOND Self Etch in combination with Venus showed good clinical results for class I and II restorations.

The detailed abstracts of these representative investigations can be found at the Journal of Dental Research 88 (Spec Iss A), 2009 ([www.dentalresearch.org](http://www.dentalresearch.org)).

To encourage further research in the field of dental materials Heraeus is proud to announce the IADR/Heraeus Travel Award.

This award is intended to support the presentation of research projects of young scientists from different continents and will be awarded the first time at the upcoming IADR meeting in Barcelona (Spain) in 2010. Further information regarding this award will be provided on the IADR's website from summer 2009 onwards ([www.iadr.org](http://www.iadr.org)).