

# Direct Printed Aligners

Powered by **Graphy**

Distributed by:

**AL-MAHDI**  
DENTAL SUPPLIES

&

Holyrood  
DENTAL CARE

***First*** suppliers of Direct Printed Aligners (DPA)  
with shape memory in the UK!

*Certified partners of **Graphy***



**AL-MAHDI**  
DENTAL SUPPLIES

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**Address for lab work:** Holyrood Dental Care, 85 Holyrood Rd, Edinburgh, EH8 8AU. Scotland, UK

## ***Would you like to offer the latest clear aligner technology to your patients?***

We are the first suppliers of Direct Printed Aligners in the UK! The world's first shape memory aligner by Graphy. Endorsed by internationally renowned orthodontists.

For a summary of this global success - over 100,000 cases completed worldwide - continue reading this document.

Some of the advantages over thermoforming aligners are:

- No attachments needed in most cases (more aesthetic).
- Less chair side time and less emergencies.
- Higher accuracy.
- Quicker results.
- More comfortable for the patient.
- More environmentally friendly, no printed models & less plastic waste.

All our orthodontic treatment planning is designed by specialist orthodontists.

Send us your scans or impressions, we will deliver the aligners.

(Pre-paid post & packaging material will be sent upon request)

Truly looking forward to hearing from you!

Best Wishes,

Samin Derakhshin  
Customer Service Rep

**AL-MAHDI**  
DENTAL SUPPLIES

*In cooperation with:*



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# World's 1<sup>st</sup> Direct Printed Aligner Shape Memory Aligner

World's first patented technology Shape Memory



Direct Aligner Cleared FDA 510(k) for the first time in the world, also certified KFDA Class II, CE Class II, GMP, ISO13485



## SCI-class Thesis of Direct Aligner



More than 16 SCI-class international academic thesis of Direct Aligner  
Expanding joint research with overseas companies, research institutes, and schools,  
and gaining academic recognition

# Direct Aligner Speakers Around the World



**Prof. Ravindra Nanda** Professor Emeritus

Department of Orthodontics University of Connecticut  
Adjunct Professor The Forsyth Institute  
Editor-in-Chief Progress in Orthodontics

"What made the big difference in orthodontics especially with the wires and bracket was when we introduce shape memory wires, wires which change their characteristic with the heat as well as when you're going to put up in the mouth then force is going to remain pretty stable over a long period of time. And this is what now Graphy aligner material is going to do."



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

Dr. Lysle Johnston Endowed Chair in Orthodontics  
Professor and Program Director  
Department of Orthodontics  
Center for Advanced Dental Education  
Saint Louis University

"I think the Graphy material is an innovative material that can fundamentally overcome the disadvantages and limitations of existing thermoplastic materials, as well as the simplicity of device manufacturing."



**Dr. Werner Schupp**

Editor in Chief "Journal of Aligner Orthodontics" Quintessence Publishing  
Editor for "Manuelle Medizin und Kieferorthopädie" (Springer Verlag)  
Advisory Board "Kieferorthopädie" Quintessenz Verlag

"Advantages of 3D aligner printing: TC-85DAC is more flexible and has a larger elastic range. Perfect fit to tooth, almost no gap"



**Dr. Kenji Ojima**

D.D.S M.D.Sc  
Invisalign faculty  
Adjunct Professor University of Torino  
President of Japan Academy of Aligner Orthodontics

"This material is a very new future. There's a better way for new generation aligners on orthodontics."



**Dr. Björn Ludwig**

Assistant Professor at the University of Homburg/Saar,  
Department of Orthodontics  
Editor in chief of the Quintessenz publication "Kieferorthopädie"  
Co-editor of the Journal of clinical Orthodontics

"I had to print out the aligners the same day, and it worked, because I can print it out in my office. It gives me control, it gives me the power."



**Dr. Yong-Min Jo**

Since 2020 Shareholder and Chief Business Development & Innovation Office at Scheu Group: Scheu Dental, CA Digital, Smile Dental Companies

"The innovative advantage of the new aligner material is the continuous power transmission thanks to its memory effect. Due to this effect, the aligner permanently returns to its original shape, which has a positive effect on the power transmission and rigidity of the aligner."



**Dr. Nearchos C. Panayi**

Scientific coll. European University Cyprus  
Visiting Research Scientist, Clinic of Orthodontics, University of Zurich,  
Author "Design It Yourself Orthodontics" book, Quintessence  
Associate Editor "Progress in Orthodontics"

"Preliminary results show excellent mechanical properties. It is clear to see that aligner printing is here to stay. The river cannot reverse. Nevertheless, in order to have a consistence and excellent result, Graphy has created a protocol which needs to be followed beginning from the appropriate aligner design, printing, and most important, UV curing."



**Dr. Simon Graf**

Smile AG  
Inventor and pioneer in CAD/CAM procedures for metal and acrylic 3D printed orthodontic appliances

"The two ways of aligners! Now direct printed instead of vacuumforming."



**Dr. Jörg Schwarze**

General Secretary of the German Society for Aligner Orthodontics (DGAO)  
Associate Professor University of Ferrara  
Research collaborations with Universities of Bonn, Cologne and Mainz  
Founder of the Aligner Academy and Dentle Smile

"Graphy is not only the leading company but the only company worldwide, providing resin and machinery for the workflow of direct printing of orthodontic clear aligners."



**Dr. Choon Gwack**

DDS, MSD, Ph.D.  
Vice-President of Busan, Gyeongnam, Ulsan Branch in KAO  
Vice-President of KSDO

Principal Dentist of Bareuni Orthodontics and Dentistry Clinic  
"Direct aligners made of shape memory polymers have the advantage of having appropriate elasticity at the temperature in the oral cavity and being soft at high temperatures, so they can be easily wearied without blockout. Thanks to this, excellent and predictable tooth movement can be obtained with minimal attachments."



**Dr. Hwa-Sung Chae**

SNU DDS, Ph.D.  
ABO Diplomate  
Business Director of KSDO  
A committee member of the international affair in KAO

"Graphy's TC-85DAC, which shows the performance of the world's first direct printing shape memory aligner, is a device material that allows me to express my creativity in a wide range of weak to strong strength that I have been waiting for so long. It can be used together with the existing MTA, so it is highly recommended for aligner treatment of tooth movement where root control is actively needed due to its affinity with conventional mechanics."

## Direct printing enables strategic thickness adjustment for corrective treatment



The Direct Aligner orthodontic device can be made according to the treatment plan for each patient characteristic by partially adjusting the thickness.

On the other hand, conventional clear aligners use thermoforming sheets which can easily be deformed, cannot have uniform thickness due to vacuum thermoforming, cannot adjust the thickness of each teeth to apply orthodontic.



Easy brushing



Healthy teeth,  
gum odor and  
deodorizing effects



Minimize dental  
damage



Less stress on the  
jaw joint

## Minimize inconvenience when wearing or removing, and allow hygienic management through heat disinfection

Block-out can be minimized for wearing and removing inside of the mouth, improving correction and minimizing patient inconvenience.

Direct Aligner can be put in hot water for heat disinfection, so you can keep it clean at all times.

Also, it is a human-friendly material.

## Shape Memory Effect



Designated  
3D Printed Aligner

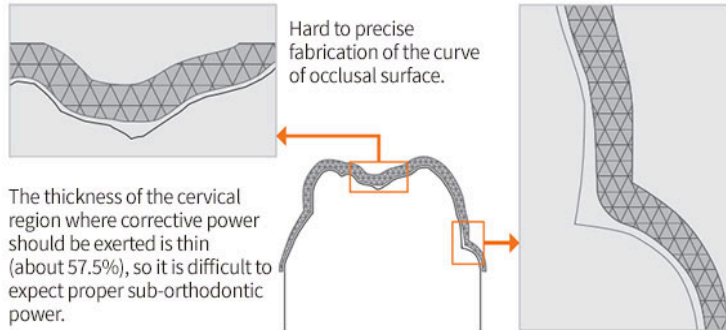


Shape Memory  
at Human Body temp

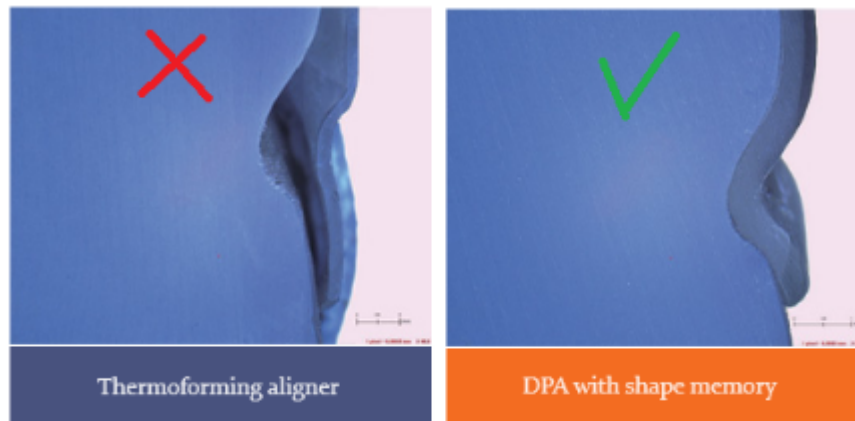
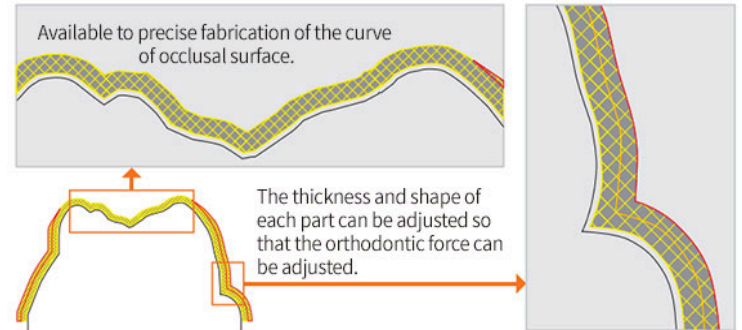
- Maintains original Shape Designed at body Temperature
- Maximization of Orthodontic Treatment Effect

# Comparing DPA With Thermoforming Aligners

## Thermoplastic/Thermoforming Aligner



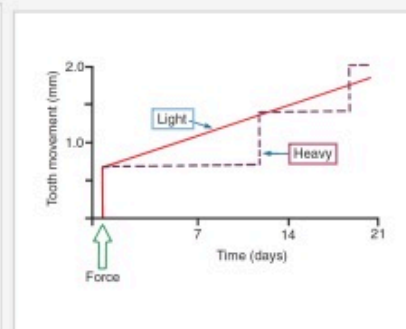
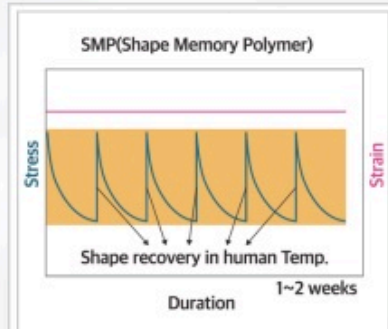
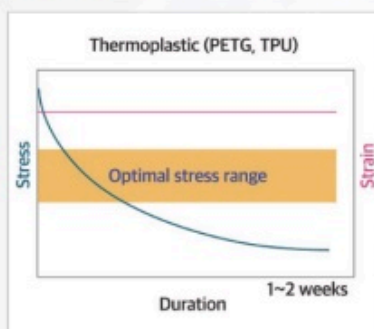
## DPA - with Shape Memory



Thermoforming aligner

Ununiform and stretched aligner due to the thermoforming method.  
Gap formed between the aligner and the tooth surface due to block out.

## Light & Continuous force



Aligners made from conventional thermoplastic sheets have heavy initial force, which overstrains the teeth (causing pain), then rapidly decreases to less than the appropriate force, and as a result, cannot maintain orthodontic force, making it difficult to obtain the intended orthodontic result.

Direct Aligner induces 'Light & Continuous force'.  
Light & Continuous force induces smooth and continuous tooth movement while activating cells.



## What is Direct Aligner? World`s 1<sup>st</sup> 3D Printed Direct Aligner

### Summary Of The Advantages

- **3D direct printing** means printing of dental models is not necessary, the aligners are printed directly. Since thermoforming, cutting and finishing is not required, there is almost no manufacturing error occurring during the manufacturing process.
- Possible to **adjust the form and thickness** on the aligners for each tooth surface in order to create the optimal orthodontic force. This is not possible with conventional aligners.
- **Reduced treatment time** and more predictable/accurate results.
- **Minimal or no block out** of undercuts are required when producing the aligners.
- **Heat disinfection to 100°C** is possible. It doesn't permanently deform like the conventional aligners would do. In fact, it returns to its original shape and mechanical properties.
- **Increased comfort** for the patients. Shape memory allows the patient to heat up and "soften" the aligner in warm water for easier insertion. The aligner will regain its original and accurate fit when exposed to mouth temperature. The same method can be used for an easier removal of the aligner.
- **More cosmetic** since no attachments are required in most cases.

## DIRECT PRINTED ALIGNERS with SHAPE MEMORY

Powered by **Graphy**

# OUR TREATMENT PACKAGES

*\*Our aim is to achieve the most flawless outcomes possible, and for this reason, all our orthodontic treatment planning is designed by specialist orthodontists.*

### **Digital Setup/Treatment Planning: £150\***

*\*This fee only applies if a digital setup is wanted on its own, without a treatment package.*

#### **Simple Case: £597 (No refinement fees)**



#### **Moderate Case: £1093 (No refinement fees)**



#### **Advanced Case: £1976 (No refinement fees)**



**Send us your scans or impressions, we will deliver the aligners.**

Pre-paid post & packaging material will be sent upon request.