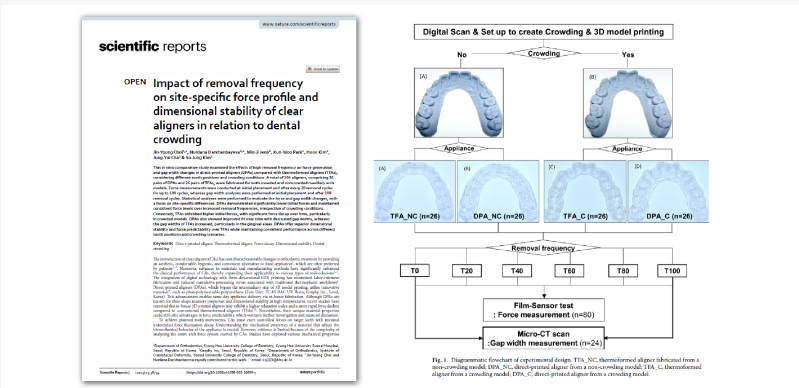
Graphy’s TC-85 Shape Memory Resin Validated in Nature’s Scientific Reports

Peer-reviewed study confirms force stability after 100 insertion cycles, marking a breakthrough in orthodontic biomechanics



Graphy’s TC-85 Shape Memory Resin study published in Nature’s Scientific Reports demonstrates stable orthodontic force and dimensional integrity after 100 insertion cycles.

MIAMI, FL, UNITED STATES, October 29, 2025 /EINPresswire.com/ -- Graphy’s TC-85 Shape Memory Resin Validated in Nature’s Scientific Reports
- Peer-reviewed study confirms force stability after 100 insertion cycles, marking a breakthrough in orthodontic biomechanics

Graphy Inc. (CEO Un-Seob Sim), a global leader in 3D-printed dental materials, announced that its proprietary TC-85 Shape Memory Aligner Resin (Tera Harz Clear) has been featured in Scientific Reports, a peer-reviewed journal published by Nature Portfolio. The publication provides independent scientific validation of Graphy’s long-term orthodontic force stability and dimensional integrity—key parameters defining next-generation aligner performance.

> “This peer-reviewed validation of our TC-85 resin in Nature’s Scientific Reports reinforces Graphy’s leadership in evidence-based orthodontic innovation.”
>
> *Graphy spokesperson*

[Study Overview]
The collaborative study, titled “Impact of removal frequency on site-specific force profile and dimensional stability of clear aligners in relation to dental crowding,” was jointly conducted by
- Professor Su-Jung Kim, Department of Orthodontics, Kyung Hee University College of Dentistry;
- Professor Jung-Yul Cha, Yonsei University College of Dentistry; and
- Dr. Hoon Kim, Senior Researcher at Graphy Inc.

The research compared direct 3D-printed aligners (DPA) fabricated from Graphy’s TC-85 material with conventional thermoformed aligners (TFA).

[Key Findings]

• Force Retention:

TC-85-based DPAs maintained consistent orthodontic forces even after 100 cycles of insertion and removal, demonstrating resistance to force degradation.

“Even after 100 cycles … the direct-printed aligners maintained consistent force levels, whereas the thermoformed aligners showed progressive force decay.” — Scientific Reports

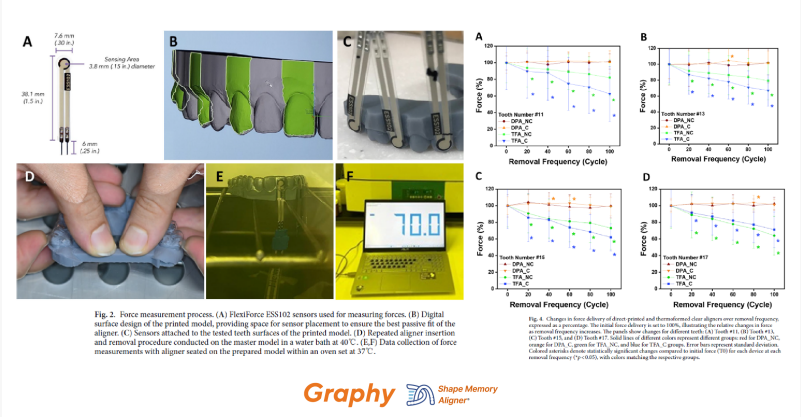
• Dimensional Stability:

The TC-85 aligners exhibited superior recovery to their original geometry, validating the resin’s shape-memory effect and structural resilience.

• Clinical Implications:

Sustained force and fit consistency suggest enhanced predictability of tooth movement, reduced need for refinements, and improved clinical efficiency.

Collectively, these outcomes introduce a new biomechanical paradigm in orthodontics, overcoming the inherent limitations of traditional thermoplastic materials that soften and deform over time.



Experimental setup illustrating the measurement of orthodontic force using TC-85 direct 3D-printed aligners, confirming sustained force stability and superior recovery performance.

Key Features of Graphy Shape Memory Aligner® (SMA)

[Scientific and Market Significance]

The publication in Scientific Reports underscores Graphy’s commitment to evidence-based innovation, placing its technology within a select group of dental materials verified through international peer review.

For clinicians, the findings establish a scientifically grounded pathway toward more stable, patient-friendly treatment.

For investors, they reinforce Graphy’s defensible IP position, scalability, and leadership in the rapidly expanding digital-orthodontics market.

[Corporate Perspective]

“This study independently confirms that Graphy’s TC-85 resin provides stable and predictable orthodontic performance,” said a Graphy spokesperson.

“Peer-reviewed validation of our proprietary technology strengthens trust among clinicians,

partners, and shareholders as we continue to pioneer 3D-printed digital dentistry worldwide.”

[About Graphy Inc.]
Graphy Inc. is the world’s first company to commercialize 3D-printed Shape Memory Photopolymer Resins for orthodontic and prosthodontic applications. Its Shape Memory Aligner (SMA) technology—activated at body temperature—maintains constant force over extended wear, enabling complex tooth movements without attachments.
Now used in over 100 countries, Graphy continues to expand global collaborations with academic and clinical partners. Guided by its vision, “Beyond Traditional Aligners, Setting New Standards in Orthodontics,” the company integrates scientific rigor with sustainable growth to drive the next evolution in digital dentistry.

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