



# IntraLase Technology

Innovative Technology for  
Truly Custom-Designed LASIK Flaps



# IntraLase Technology: Two Innovative Laser Platforms

The unparalleled uniformity and precision, biomechanical stability, and unsurpassed safety profile delivered by **IntraLase** Technology are key components of the **iLASIK** Technology Suite.

## Biomechanical Stability

- Stronger flaps through faster wound healing<sup>1</sup>
- Increased adhesion postoperatively<sup>1</sup>

## Enhanced Safety

- Flap creation safety advantages
- Postoperative safety advantages
- Over 3.5 million procedures and counting

## Unparalleled Uniformity and Precision

- Unparalleled control over flap parameters such as:  
**diameter • depth • edge angle • centration**
- Significantly smoother stromal beds

## Advanced Corneal Options

- **IntraLase** Enabled Keratoplasty (IEK)
- Intrastromal ring implantation

AMO offers two innovative laser platforms. Both laser systems embody **IntraLase** Technology, an essential element of the **iLASIK** Solution.

- **IntraLase FS** Laser System
  - Gives surgeons unparalleled control for safer, precision-designed treatments
- **iFS** Femtosecond Laser System
  - Has all the features of the **IntraLase FS** System, plus increased speed and enhanced flap-customization capabilities. For example, surgeons can make an inverted bevel-in side cut and select an elliptical flap option

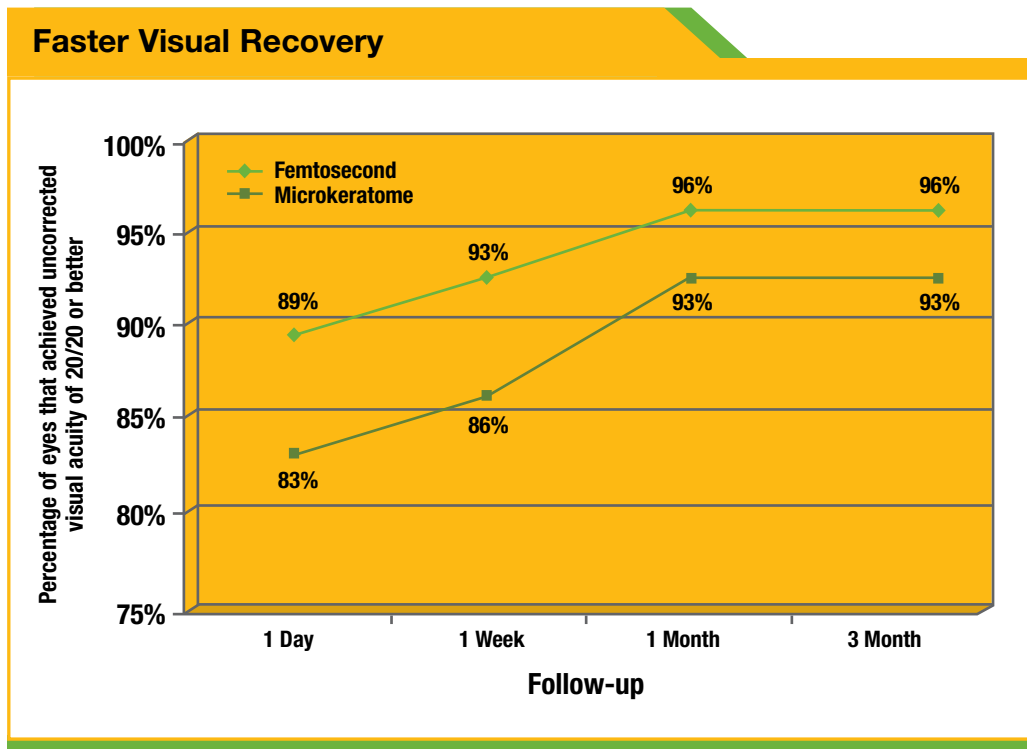


The **IntraLase FS** and **iFS** Laser Systems are ophthalmic surgical lasers indicated for use in patients undergoing surgery or treatment requiring the initial lamellar resection of the cornea. Contraindications may include corneal edema, glaucoma, and keratoconus. Risks and complications may include corneal pain, flap tearing, and epithelial ingrowth. Patients are requested to consult with their eye care professional for a complete listing of contraindications and risks. U.S. Federal law restricts this device to sale, distribution, and use by or on the order of a physician or other licensed eye care practitioner.

# Faster Visual Recovery

## IntraLase Technology Showed Faster Visual Recovery<sup>2</sup>

At all time points measured, the percentage of eyes that achieved a postoperative UCVA of 20/20 or better was significantly higher in the femtosecond group.

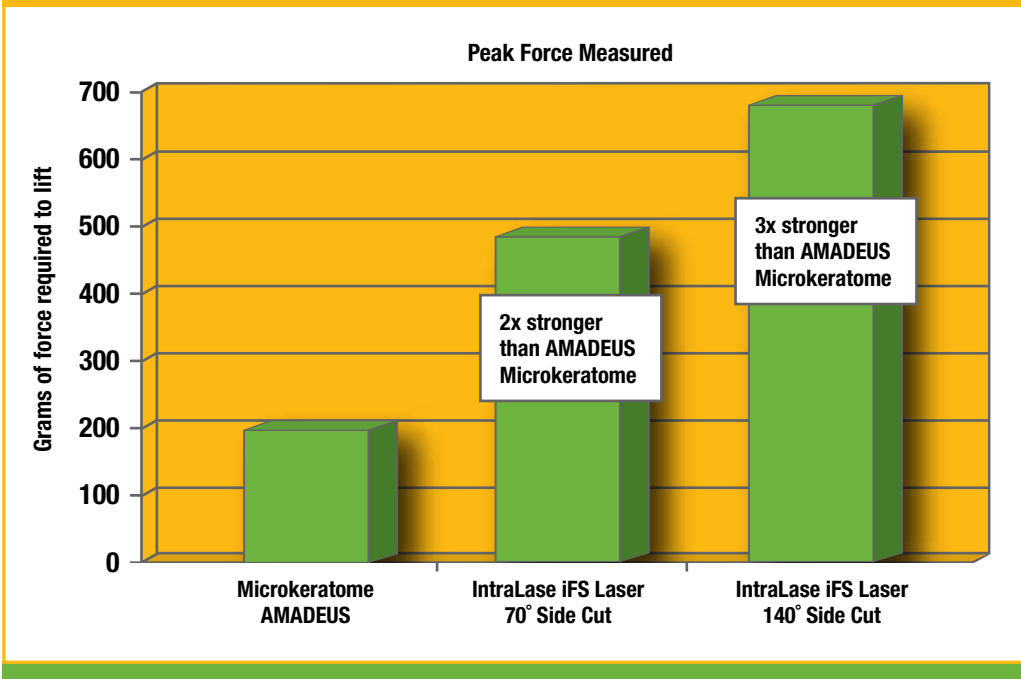


A retrospective analysis of 1,000 eyes treated with the **IntraLase FS** Laser and 1,000 eyes treated with a mechanical microkeratome (N=2,000).



# Biomechanical Stability

## 3-Month Comparative Measurement of Flap Tensile Strengths<sup>1</sup>



In New Zealand White rabbit eyes, three groups of flaps were created with either the AMADEUS™ microkeratome, *iFS* Laser 70° side cut angle, or *iFS* Laser 140° side cut angle. At 3 months, a force gauge was attached to a curved lens and pulled perpendicularly until the flap dehisced and peak force could be measured. Note the *IntraLase FS* Laser has a side cut angle up to 90°.

“These studies were statistically significant and certainly suggest that the inverted bevel design of the *IntraLase* flap is far more stable than mechanically created flaps. The ability to precisely create truly customized flaps for every patient further validates the *iLASIK* Procedure.”

— Prof. Dr. Michael C. Knorz  
FreeVis LASIK Zentrum,  
Universitätsklinikum Mannheim, Germany



# Enhanced Safety with Unparalleled Uniformity and Precision

“All-laser” **IntraLase** Technology offers numerous safety advantages over microkeratome technology both during flap creation and postoperatively.

## Flap Creation Safety Advantages<sup>3-5</sup>

Reduces or eliminates several complications including:

- Buttonhole or free flaps
- Irregular flaps
- Microperforations
- Decentered flaps
- Epithelial defects

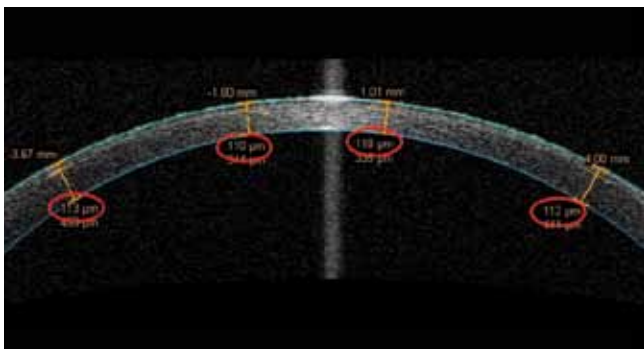
## Postoperative Safety Advantages<sup>3-5</sup>

- Less ectasia
- Reduced higher-order aberrations (HOAs)
- Improved contrast sensitivity and lower enhancement rates

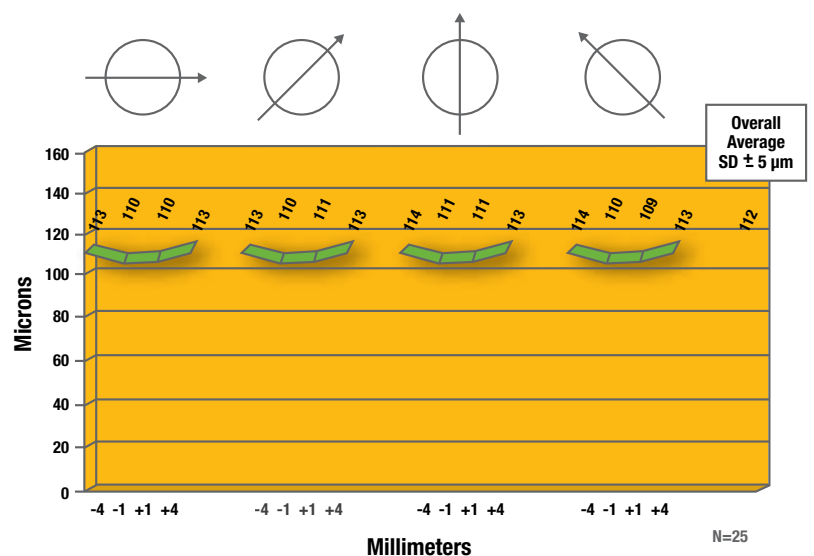
## Unparalleled Uniformity and Precision Give You the Ability to Precision-Design Your Patients' Intracorneal Architecture

The unique computer-controlled laser system enables surgeons to create thin, planar flaps with a uniform mean thickness of  $112 \pm 5 \mu\text{m}$  and an average standard deviation of as little as  $4 \mu\text{m}$  within each flap,<sup>6</sup> maximizing residual bed and potentially producing a more stable post-LASIK cornea.

### Average SBK Flap Thickness



Courtesy of Jason Stahl, MD, Durrie Vision, Overland Park, KS, USA.

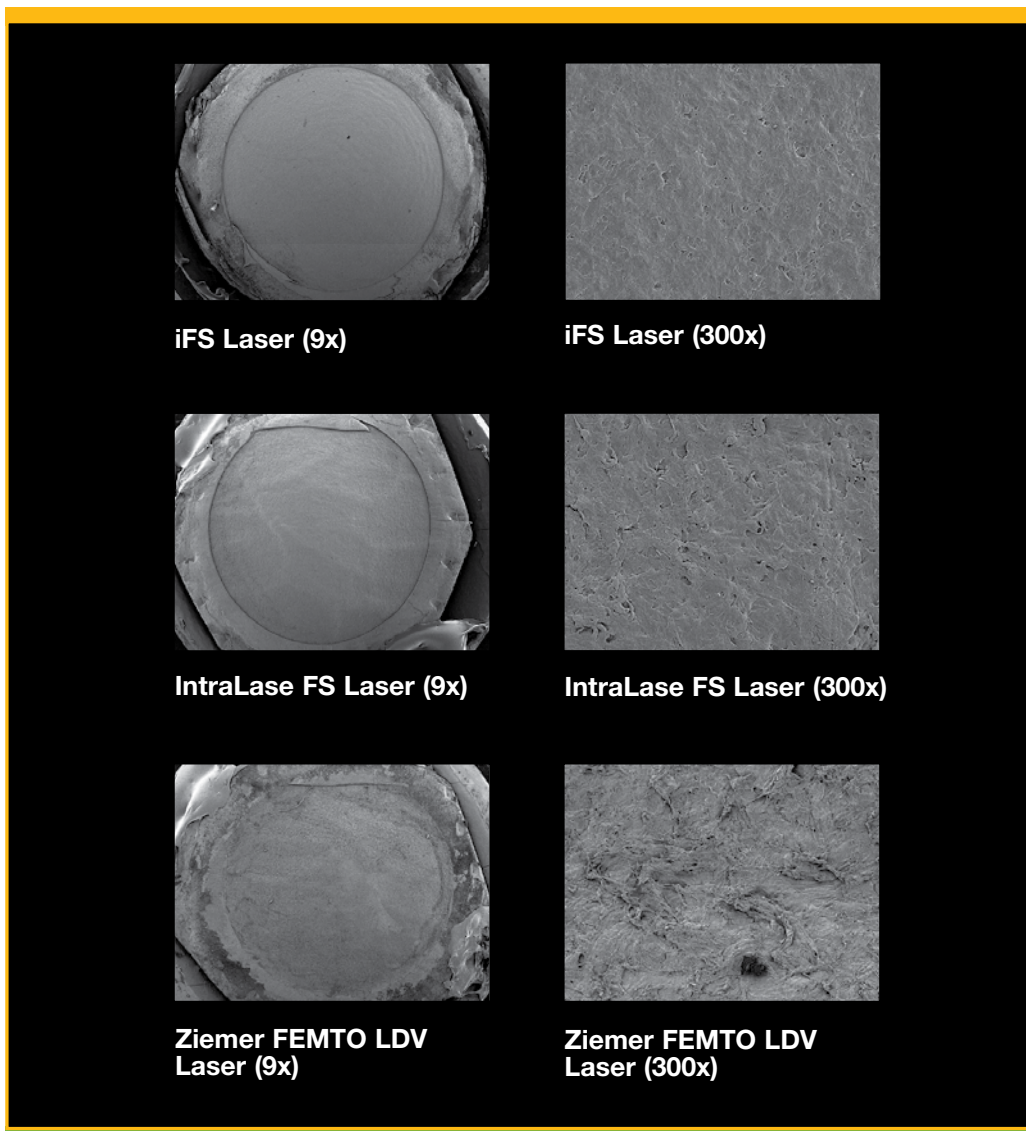


Courtesy of Jason Stahl, MD, Durrie Vision, Overland Park, KS, USA.

# Significantly Smoother Stromal Beds

**IntraLase** Technology results in significantly higher-quality stromal beds than are possible with the FEMTO LDV™.

- Stromal bed roughness with the **iFS** Laser was 39.55 nm
- Stromal bed roughness with the **IntraLase FS** Laser was 41.20 nm
- Stromal bed roughness with the Ziemer FEMTO LDV Laser was 42.87 nm



Images of the **IntraLase FS** Laser and Ziemer FEMTO LDV Laser are provided by Dr. Daniel S. Durrie.

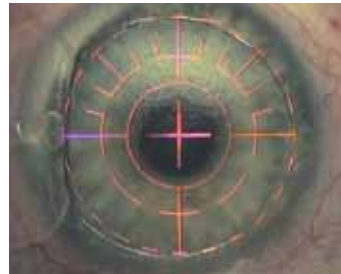
# New Capabilities from the Latest Femtosecond Laser

The **iFS** Femtosecond Laser System has all the features of the **IntraLase FS** System, plus increased speed and enhanced flap-customization capabilities that include:

- Inverted bevel-in side cut up to 150°
- Elliptical flap option
- Higher repetition rate and faster procedure time — enhance patient comfort and confidence
- Tighter spot separation — provides smoother stromal beds and a virtually effortless flap lift
- Lower energy per pulse — may reduce tissue response and inflammation
- High-resolution video microscope — for maximum surgeon comfort

## Elliptical Flap Enhances Surgical Options

- Distributes forces symmetrically to the elliptical cornea
- Prevents resection of the vital peripheral corneal fibers that contribute greatly to the biomechanical strength of the cornea
- Moves the hinge peripherally to maximize stromal bed exposure for full delivery of excimer ablation
- Allows use of a wider hinge angle to create flap stability



Elliptical Flap



Round Flap

## Inverted Bevel-In Side Cut

Inverted bevel-in side cut, customizable to 150°, promotes flap replacement, positioning and adhesion for optimal biomechanical stability of the post-LASIK cornea.



Inverted Side Cut Option to 150°

# The iLASIK Solution

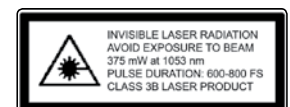
## Advanced Technology that Delivers Personal Best Vision

The **iLASIK** Solution, available exclusively from AMO, is the combination of **IntraLase** and **Advanced CustomVue** Technologies. This unique blend of technologies sets a new standard for laser vision correction.

- **20/16 or Better**
  - The exclusive combination of **IntraLase** and **Advanced CustomVue** Technologies provides a truly customized treatment, capable of producing 20/16 or better vision\*
- **Good Enough for NASA and Your Patients**
  - NASA astronauts and U.S. fighter pilots can have laser vision correction surgery today because of the exclusive, validated safety and precision performance of **iLASIK** Technologies
- **Leading Innovation**
  - With over 20 years of innovation and more than 10 million procedures worldwide, **iLASIK** Technologies are the true industry leaders
- **Physician Confidence**
  - The **iLASIK** Platform, along with unmatched service and support, gives surgeons the confidence to consistently deliver the best possible outcomes for the broadest range of patients



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\*20/16 results delivered with excimer laser; clinical studies sent to the FDA via P930016 supplement 021.

### References

1. Knorz MC, Vossmerbaeumer U. Comparison of flap adhesion strength using the Amadeus microkeratome and the **IntraLase iFS** femtosecond laser in rabbits. *J Refract Surg.* 2008;24(9):875-878.
2. Tanna M, Schallhorn SC, Hettinger KA. Femtosecond laser versus mechanical microkeratome: A retrospective comparison of visual outcomes at 3 months. *J Refract Surg.* 2009;25(suppl 7): S668-S671.
3. Binder PS. One thousand consecutive **IntraLase** laser in situ keratomileusis flaps. *J Cataract Refract Surg.* 2006;32(6):962-969.
4. Stonecipher K, Ignacio TS, Stonecipher M. Advances in refractive surgery: microkeratome and femtosecond laser flap creation in relation to safety, efficacy, predictability, and biomechanical stability. *Curr Opin Ophthalmol.* 2006;17(4):368-372.
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6. Stahl JE, Durrie DS, Schwendeman FJ, et al. Anterior segment OCT analysis of thin **IntraLase** femtosecond flaps. *J Refract Surg.* 2007;23(6):555-558.