

REVOLUTIONIZING BIOMECHANICS AT THE SPEED OF LIGHT

MEASURING OCULAR BIOMECHANICS BY
BRILLOUIN IMAGING

Dimitri Chernyak, COO, Intelon Optics



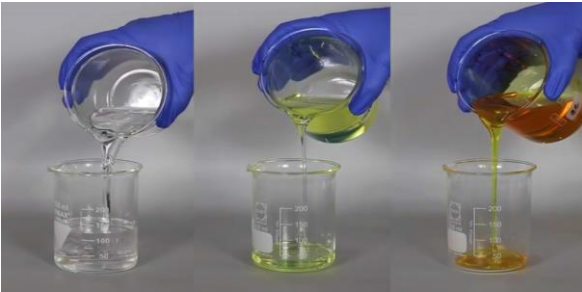
BOSS - Access to Another Dimension of Information



Jello (More Compliant Material)



Crystal (Stiffer Material)

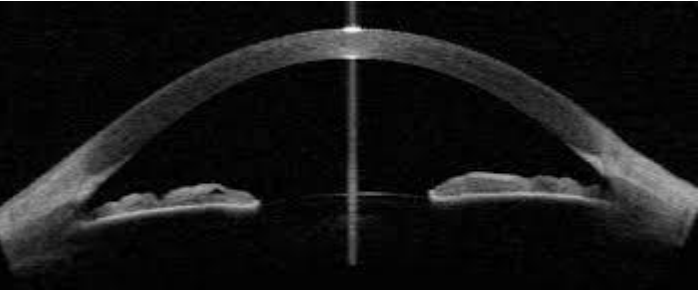


Water (Thin) < Oil (Thicker) < Honey (Thickest)

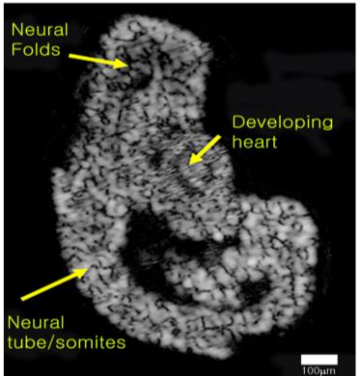
BOSS (Brillouin Optical Scanning System) Invented at Harvard/MGH Measures Both Elasticity & Viscosity of Living Tissues and Cells

- Light based
- Non-contact
- Real Time measurement
- High Resolution in 3D
- Direct & Inductive Measurements

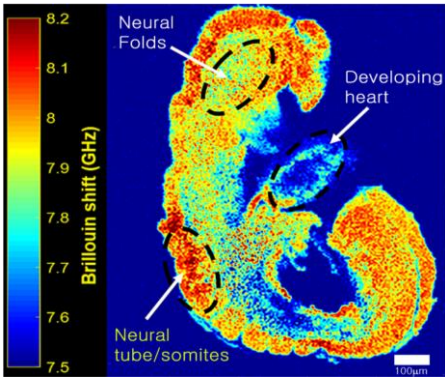
Currently Available: Morphology



Biomechanical Information

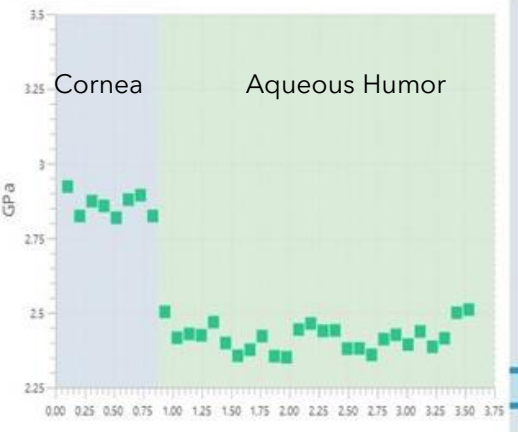


OCT



Brillouin Imaging (BOSS)

Details for one point scanned through the cornea



We Can Measure Biomechanics of Living Tissue & Cells Using Light

BOSS® in Ophthalmology



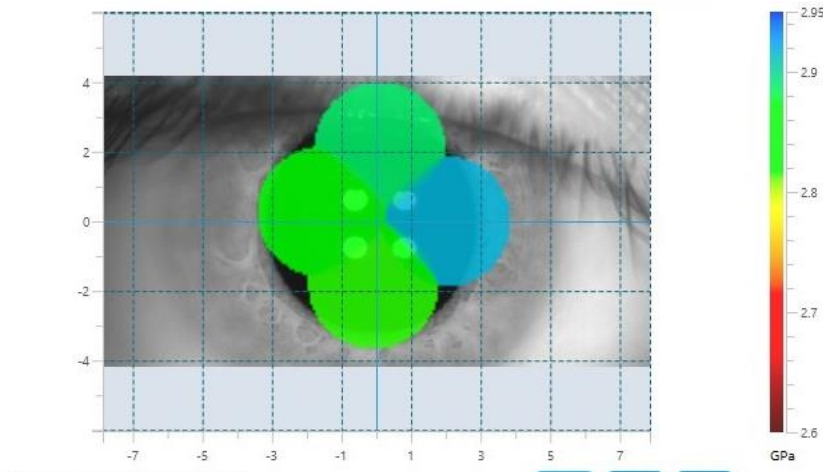
BOSS® Program Key Achievements

- ISO 13485 /MDSAP Certification
- Regulatory Product Registrations:
 - **Submitted** - US (510K)
 - **Approvals** - Korea, Canada, EU
 - **In Preparation** - China, Australia
- Established Distribution Channels (EU, Korea, Canada, China)
- User Feedback Collected and Implemented
- Marketing exposure via Tradeshows, Presentations, Papers
- SaaS (Software as a Service) ready for initial deployment
- 35 Manufactured, 20 Sales & Leases
- End User Price - \$150K

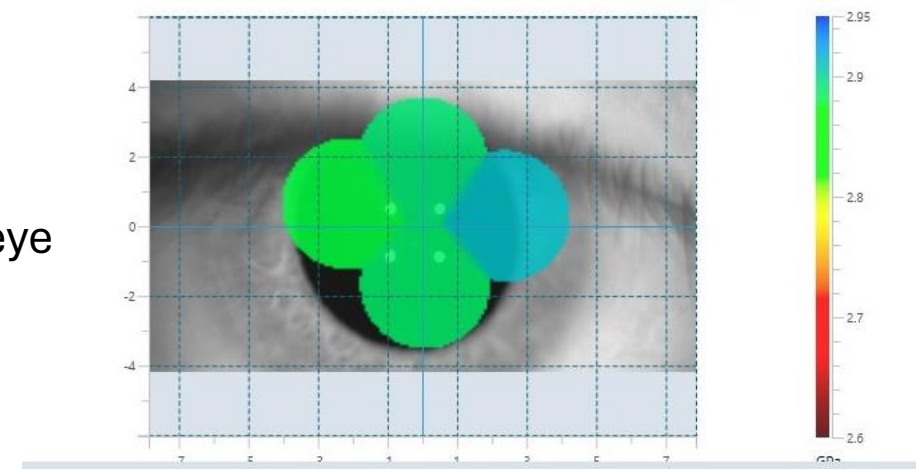
BOSS cornea scans are repeatable and reproducible

Intelon study at Vold Vision, ARVO 2023

Intelon's FDA 510(k) Study	B2-0008	B2-0012	B2-0014	Any Device
Number of Subjects	29	29	31	32
Number of Scans Used in Analysis	85	84	90	259
Avg. Stiffness (GPa)	2.831	2.811	2.854	2.833
Avg. Stiffness (GPa) across devices				
Avg STD (GPa)	0.006	0.005	0.003	0.003
Repeatability (% CV)	1.4	1.3	0.5	1.1
Reproducibility (% CV)		NA		0.129



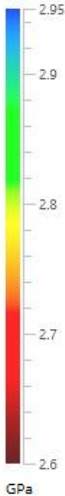
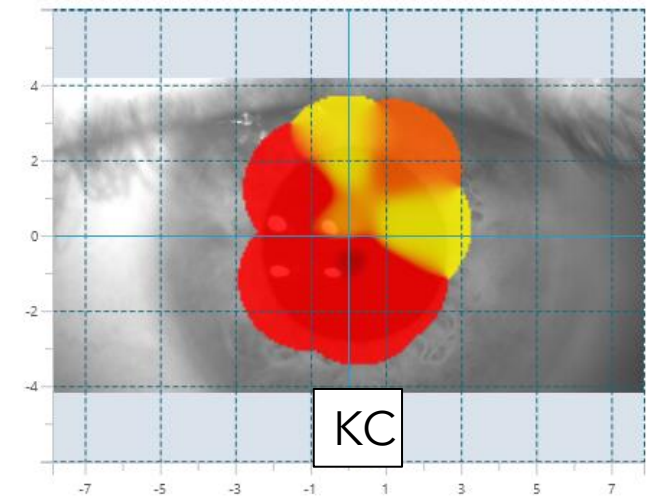
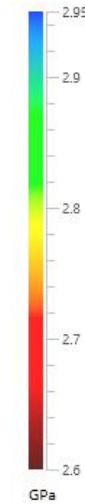
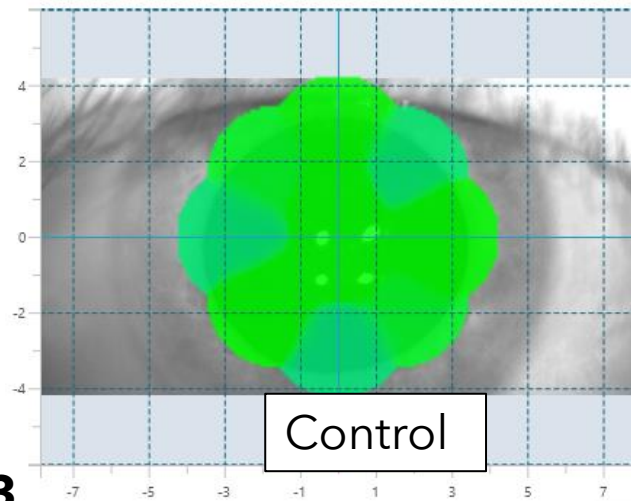
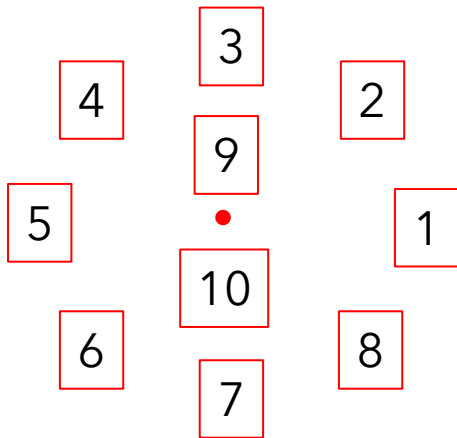
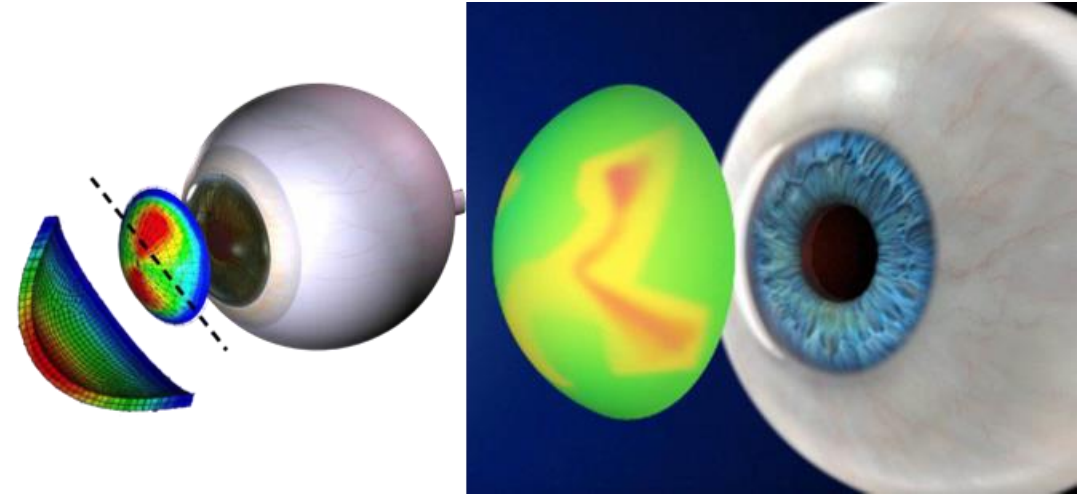
Replicate scans on one eye



BOSS: Resolving Unmet Needs in Multiple Fields

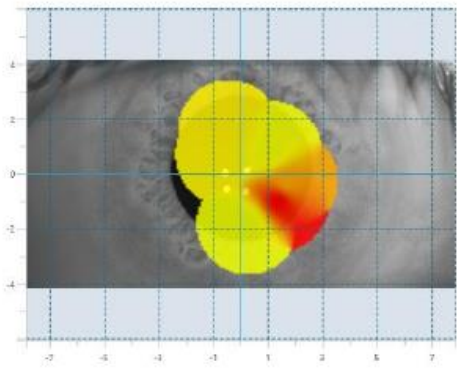
BOSS Ophthalmology

- ✓ Early Diagnosis of Corneal Diseases
- ✓ Screening Tool for Vision Correction Procedures
- ✓ Customization of Refractive & Cataract Surgeries
- ✓ Customization of Corneal Cross-linking Procedures

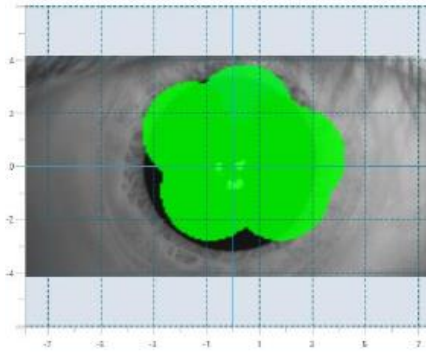


R. Vinciguerra (Milan), AECOS 2023

BOSS shows changes in corneal stiffness with Crosslinking (CXL)



Eye: OD
 Exam date: Jul 14, 2023 1:06 PM
 Instr. ID: B2-0030
 Study ID: n/a
 Operator: hongda
 Central BM: 2.777 GPa
 Mean BM: 2.757 GPa
 Min BM: 2.716 GPa



Eye: OD
 Exam date: Jul 24, 2023 5:38 PM
 Instr. ID: B2-0030
 Study ID: n/a
 Operator: hongda
 Central BM: 2.854 GPa
 Mean BM: 2.840 GPa
 Min BM: 2.818 GPa

Top: Eye & ENT Hospital of Fudan University: pre-CXL, 10 days post-op
Bottom: R. Vinciguerra & S. Paladino (Milan): pre-CXL, 1-month post-op

