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## CLINICAL CONFERENCE & EXHIBITION

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**A New Method for Measuring the Pre-Lens Non-Invasive Break Up Time (PLNIBUT)**

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# Motivation

- 140 million people wear CL for refractive error correction
  - 10-50% drop out within 3 years of commencement
    - 41.9% to 52.9% due to discomfort
      - One major factor affecting comfort is **wettability.**

*Markoulli M. and KolanuS. Contact lens wear and dry eyes: challenges and solutions. Clin Optom (Auckl). 2017; 9: 41–48.*
*Rumpakis J. New data on contact lens dropouts: an international perspective. Rev Optom. 2010.*

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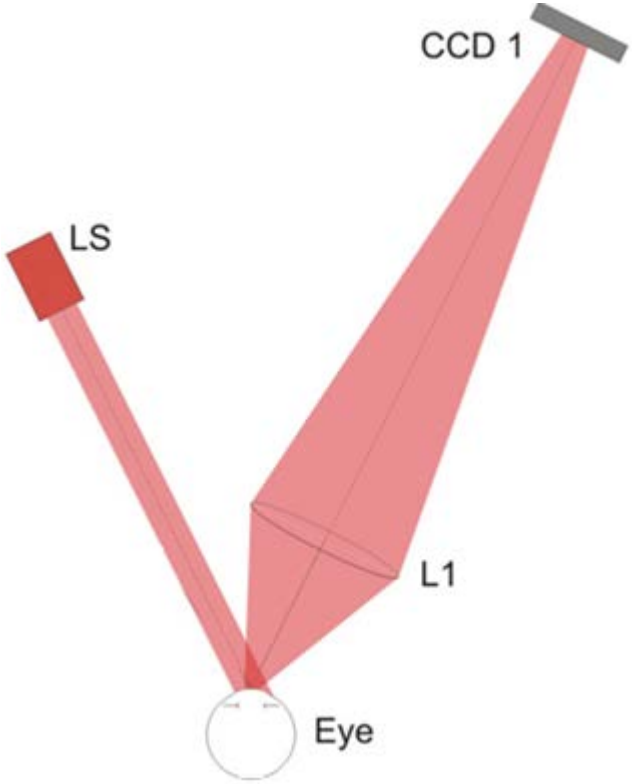
No Gold-Standard method for measuring contact lens wettability

A newly developed optical setup used to assess tear film dynamics was adapted to measure contact lens wettability.




*Aldaba, M. et al. (2019). Tear film stability assessment by corneal reflex image degradation. JOSA A, 36(4), B110-B115*

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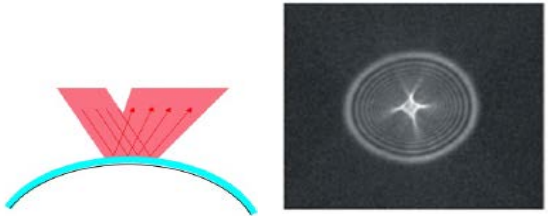
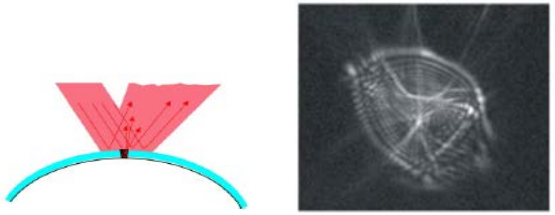
# Corneal Reflex Image degradation

Assesses tear film stability based on the degradation of the 1st Purkinje image by detecting break ups occurring on the anterior surface of the cornea



Regular tear film



Broken tear film

Non-invasive, objective, low cost , simple to use

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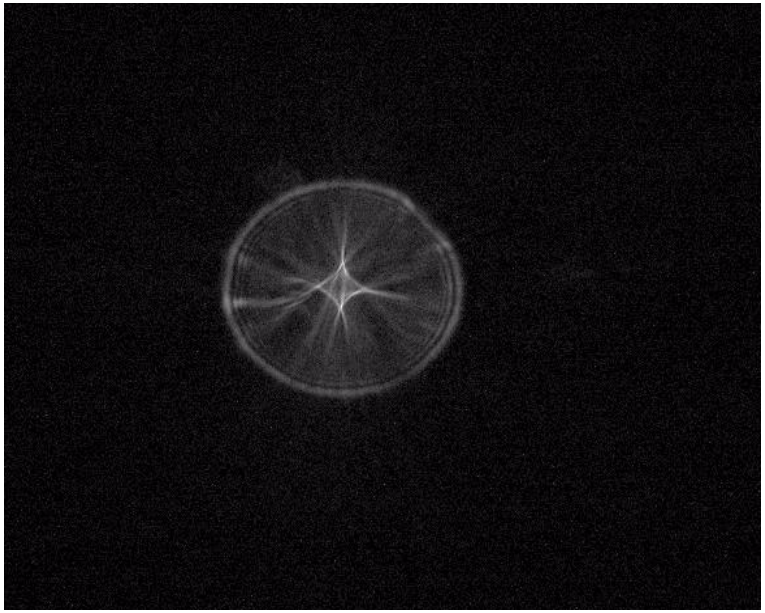
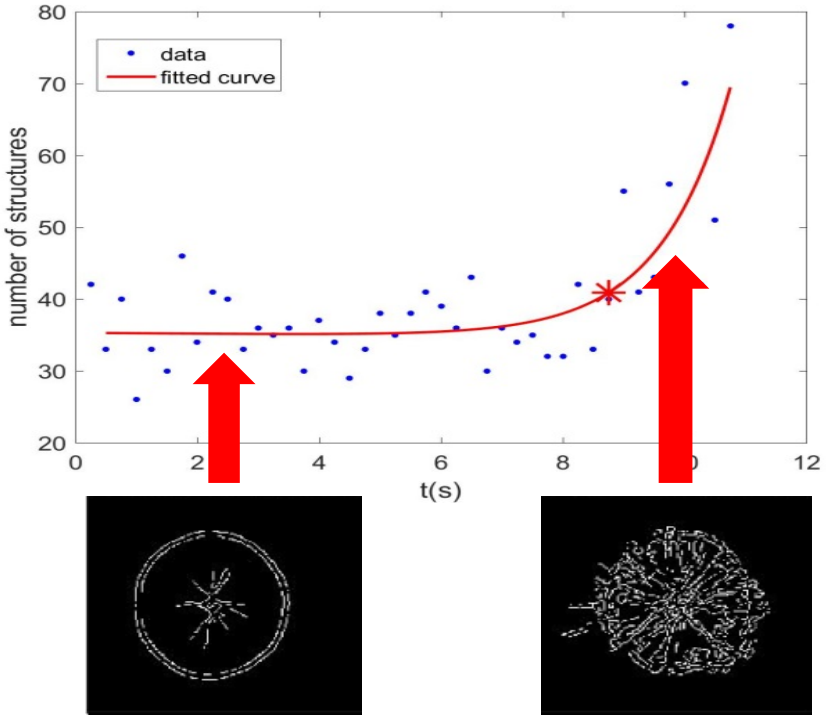
# Image Processing



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# Methods

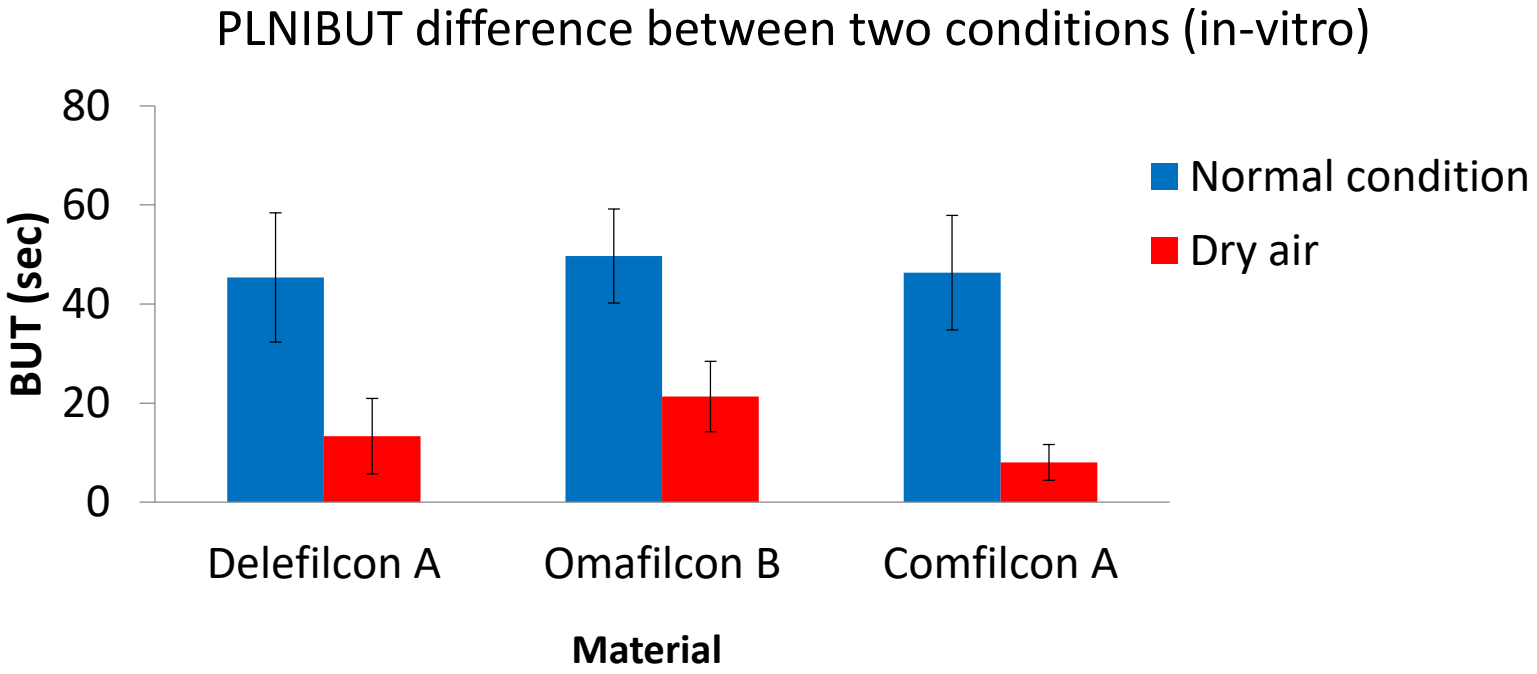
- CL materials (in-vitro & in-vivo):
  - Delefilcon A
  - Omafilcon B
  - Comfilcon A

Measurements done under normal environmental condition and when exposed to dry air.

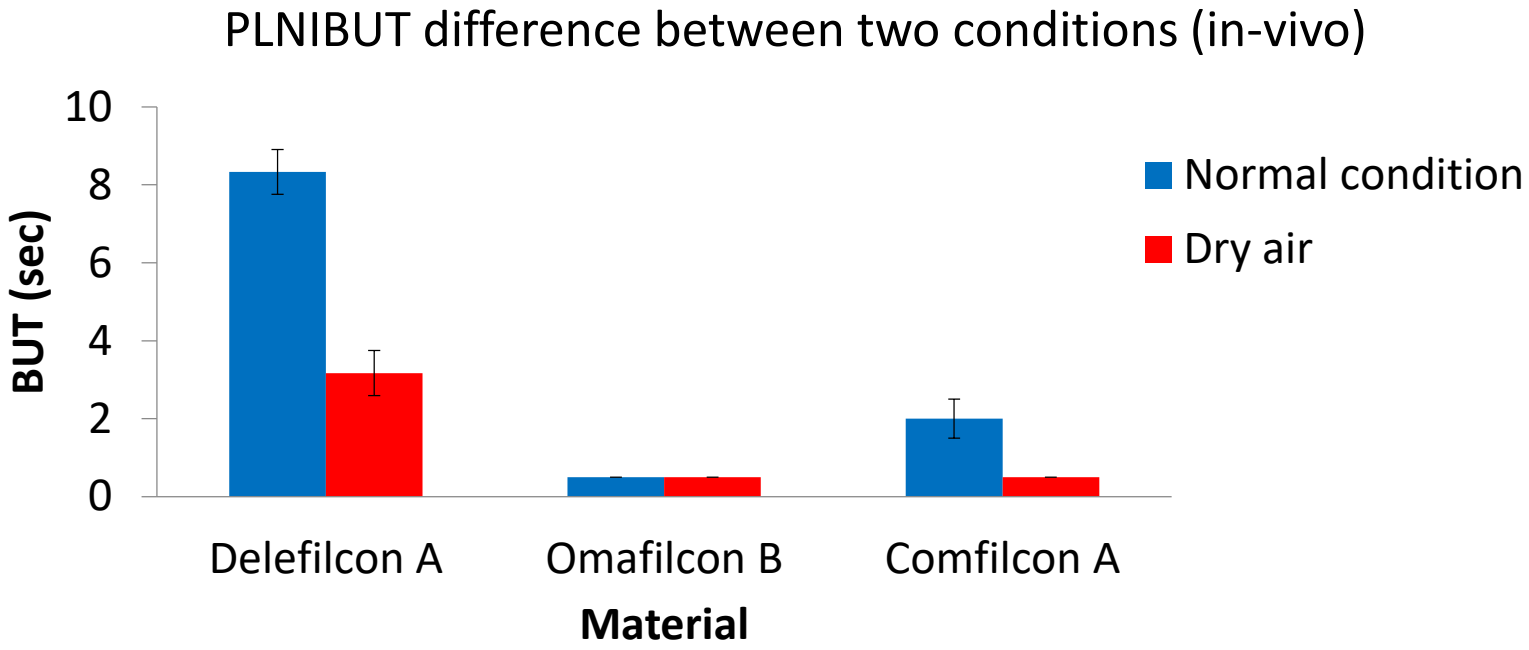
# Methods

- 3 measurements for each material/condition combination
- Temperature: 19°c ± 1.53 °c
- Humidity: 29.4% ± 2.9%
- Normal to dry condition:
  - Temperature ↗ by 6 °c
  - Humidity ↘ by 6%

# Results (in-vitro)



# Results (in-vivo)



# Conclusion

- A new method was adopted for measuring in-vivo and in-vitro CL wettability
- It is objective, non-invasive, easy to use, and low cost
- The method was able to detect the change in PLNIBUT between different CL materials under different conditions
- It has potential to be used as a tool to determine the contact lens wettability

# Thank You

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