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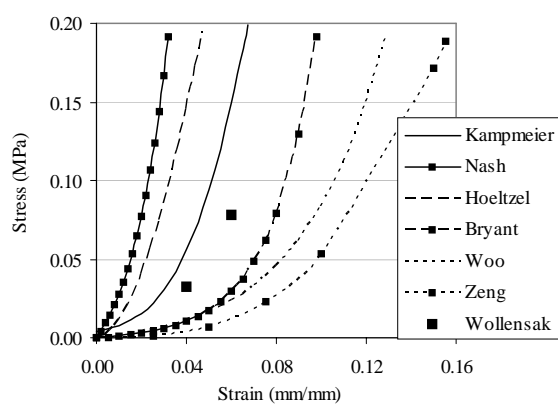
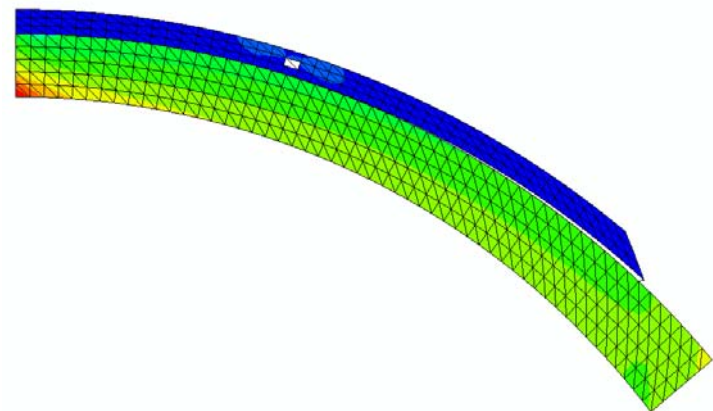
## Characterisation of Corneal Biomechanics

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### Background:

Predictive simulations are important for design of refractive surgery procedures, estimation of intra-ocular pressure and planning of contact lens wear. Simulations require representative material models.

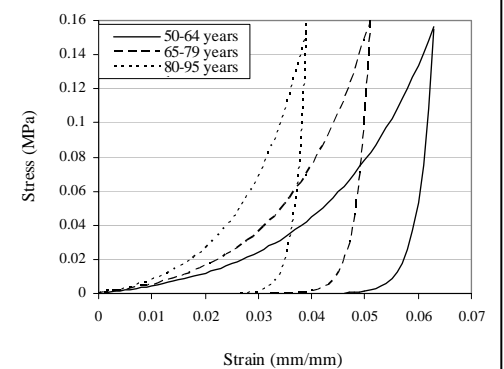


Lack of control of test conditions in earlier work resulted in a wide variation in mechanical properties of the human cornea. This made predictive numerical simulation inaccurate and unreliable.

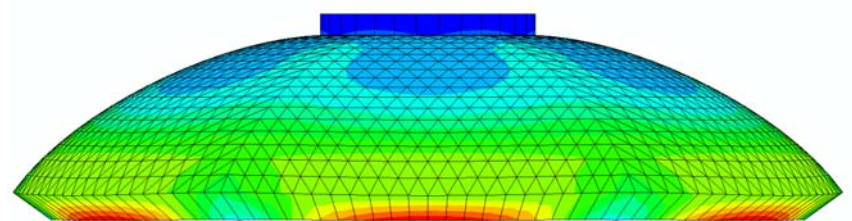
Ratio between highest and lowest reported values of E is > 40.



**Developments:** Test methods that control specimen temperature, hydration and strain rate are developed. Tight control of test conditions resulted in a narrow scatter of results. This work resulted in a stress-strain behaviour pattern that varied with age.



**Achievements:** New material models were used in numerical simulations to improve accuracy of intra-ocular pressure measurement techniques. Correction factors were developed for Goldmann Applanation tonometer, the most commonly used method for measuring intra-ocular pressure. This work has been either published or recently submitted.



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