Project proposal

Project title	Glistenings on intraocular implant lenses
First Supervisor	Professor — Barbara Pierscionek
Second Supervisor	Dr Claudio Guisca (NPL); Dr Christina Guisca (NPL)
School	Life Sciences
Other member of supervisory team (no more than three KU supervisors in total)	
Specific requirements beyond 2:1 degree	Suit a graduate from Engineering or Science interested in applying the latest measurement technologies to the solving of an important medical problem.

Project summary

(max 4,000 characters)

One of the most common eye conditions that occurs with age is cataract. This causes the lens inside the eye to become opaque. As the average age of the population is increasing, there is an ever greater need for cataract treatment. Currently the only means of treating cataract is by surgical removal of the eye lens and replacement with an intraocular implant lens. These implants are made from a range of different materials and are designed to minimise further opacifications or secondary cataracts forming.

However, in a number of cases, small spots that glisten appear on implant lenses and these can affect vision. The nature of these opacifications or glistenings is not known. This project aims to investigate how glistenings are caused and what can be done to prevent them. Advanced microscopic and optical methods for surface detection and measurement of material properties such as optical density will be used.

Measurements will be conducted on implant lenses of varying materials subjected to a range of environmental conditions. The methods will include Atomic Force Microscopy and Talbot interferometry and will involve collaborative work with the National Physics Laboratory in London and the SPring8 synchrotron in Japan.