

Project proposal template

Graduate School studentships

March 2015

<i>Project title</i>	Contact lenses as a tool for continuous monitoring of glucose level in diabetic patients	
<i>First Supervisor</i>	Professor <input type="text" value="Raid Alany"/>	<input type="text" value="Raid Alany"/>
<i>Second Supervisor</i>	Dr Amr ElShaer	
<i>School</i>	Pharmacy and Chemistry <input type="text"/>	
<i>Other member of supervisory team (no more than three KU supervisors in total)</i>	<input type="text"/>	
<i>Specific requirements beyond 2:1 degree</i>	Degree in Pharmaceutical sciences, Material Sciences, Chemistry or other Science related degrees	

Project summary (max 4,000 characters)

The numbers of diabetic patients have doubled between 1996 and 2012 to be 2.9 million. In the UK, three people are diagnosed diabetic every 10 minutes, and 5 million people within the UK are predicted to be diabetic by 2025. Currently, there is no cure for diabetes, but controlling blood glucose level can help in reducing disease-associated complications, and monitoring of glucose levels is required even where controlled through medication. We are proposing a novel, non-invasive method of monitoring blood glucose, which will benefit patients by allowing them to monitor their sugar changes by a simple glance in a mirror. Fluorescence dyes-alizarin- together with boronic acid will be suspended in contact lens to enable continuous monitoring of glucose level in the tear fluid. Boronic acid binds to the non-fluorescent dye and generates fluorescence in the absence of glucose. Upon exposure to glucose, boronic acid release alizarin and the fluorescence fades. The proposed project will evaluate the responsiveness of the fluorescent sensor to variation in glucose concentration in simulated tear fluid, incorporate the sensor into a nano-particulate system prior to adding to the contact lens polymer matrix and ensure the suitability of the fluorescent-laden contact lenses for wearing by evaluating their physical properties.

Keywords:- continuous glucose monitoring, contact lenses, fluorescence dyes, Diabetes.

