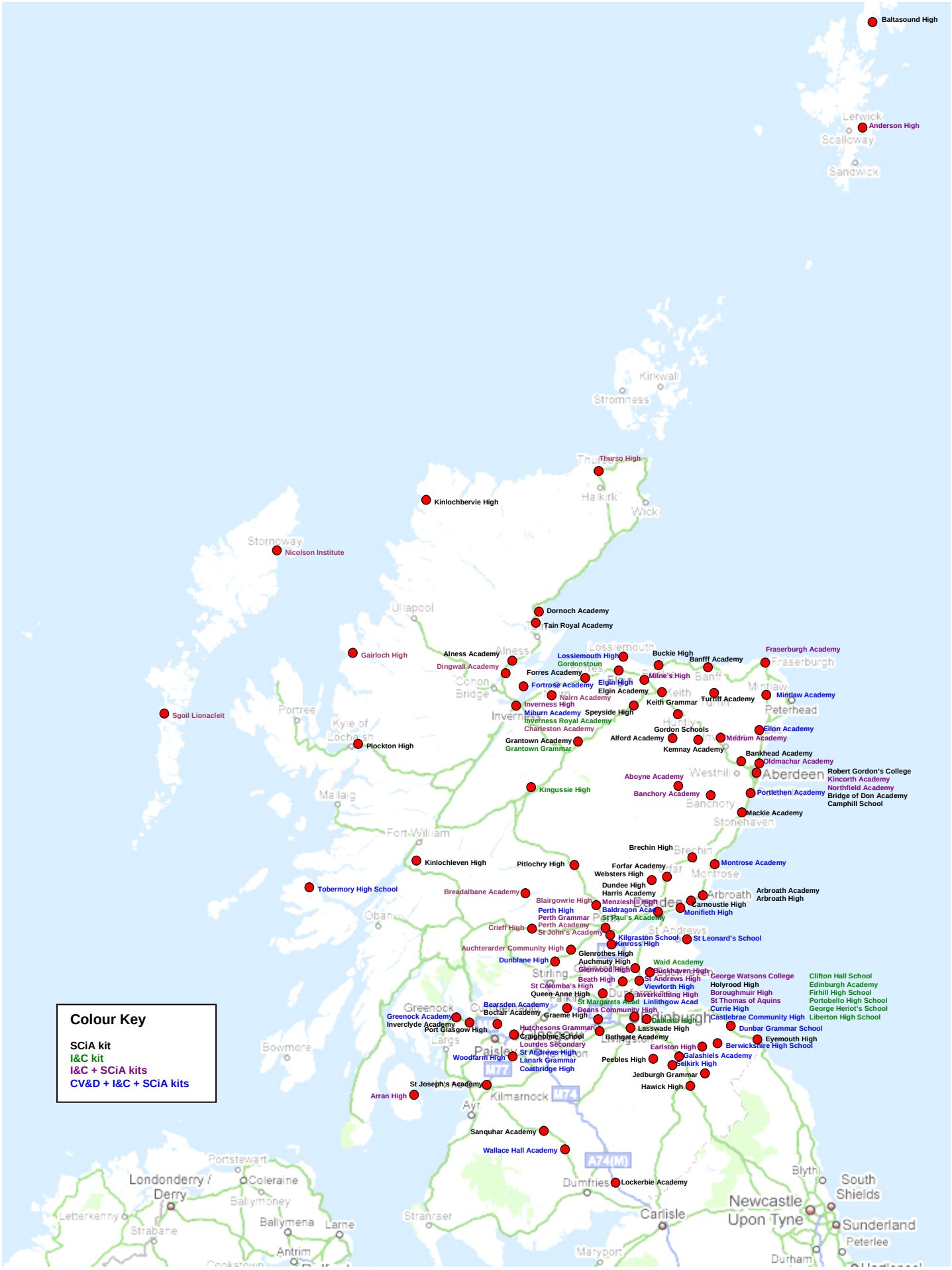
The Rank Prize Funds
Optoelectronics College

Objectives of the Scottish Pilot for an Optoelectronics College

- To make classroom science more rewarding, relevant and up to date.
- To pilot an Optoelectronics College that will train and equip S1/S2* science teachers in at least 100 Scottish schools. Through CPD, this will empower these teachers confidently to lead their pupils in some exciting and topical classroom science activities. These will be based on modern optoelectronics and will support the delivery of the science outcomes in the new Curriculum for Excellence.
- Through these curricular classroom activities, to inspire more S1/S2 learners to choose science subjects in their course options and enthusiastically to contemplate careers in science, engineering, medicine, or teaching, particularly in Scotland. There is also the probability that trained teachers will pass on their know-how to staff colleagues and so this could be seen as a seed-corn initiative in science.
- To reverse the long-term decline in the numbers of pupils taking Higher Physics & Chemistry and encourage them potentially to engage with, and contribute to, creating many more of tomorrow's technologies and businesses, especially in Scotland.
- To support and embolden science teachers through a respected college of their peers, including academic and industrial researchers working in Scotland.
- To improve significantly the international standing of Scottish science education.
- To collect and collate feedback and other data that will enable informed decisions to be reached on whether, or not, to roll out this college concept to many more Scottish schools and science teachers and in other areas of science education.
- To focus the pilot on three themes

  1. ***Solar Cells in Action (SCiA)***
     a. Efficient and cost effective conversion of sunlight to electricity
     b. The principal factors affecting the operation of solar cells
     c. Their uses in generating renewable energy for applications in housing, businesses, transport etc.
     d. The need for and methods of safe and cost-effective energy storage
  2. ***Colour Vision and Displays(CV&D)***
     a. How we see & perceive colours & how primary colour images can be mixed
     b. How flat panel displays, such as LCDs, work – both basic and complex
     c. Their principal advantages and limitations as output devices
     d. How and why they are used in laptops, TVs and mobile phones
  3. ***Illumination and Communication (I&C)***
     a. Comparisons between current light sources and new scientific developments in LEDs (both visible & invisible) and their environmental sustainabilities
     b. How and why new white LED sources produce light much more efficiently
     c. Their uses in houses, businesses, transport, communications and horticulture
     d. Refraction/total internal reflection & the guiding of light along optical fibres & how these can be used to carry signals e.g. for telephones, or internet data
- To use our experience also to pilot the OEC appropriately in England and Wales.

* Years 1 and 2 in secondary school, i.e. 12 to 13 year old pupils.



Locations of Schools given Optoelectronics College Kits and with at least one OEC trained Member of Staff at end of November 2010

Further kits exist in Glasgow City Education Department and Dundee University, School of Education