Temperature dependent Surface Photovoltage

Finding an illumination setup for the MacAllister

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1 Introduction

Over the course of the last months, we have established that we can reliably measure the contact-potential difference, CPD, using the Mc Allister in the Lakeshore setup.
The problem lies with measuring the temperature dependent surface photo voltage, SPV(t). *Since the aim is to measure SPV at liquid nitrogen and or liquid helium temperatures, the source of illumination for the measurement must not heat the sample. Not only would problems to reach low temperatures arise with the use of a regular light source, but damage to the system might also ensue due to a large temperature gradient between the sample chamber and the radiation shield. For these reasons, an LED light-source was chosen.*
In the follwing, I will describe the experiments already carried out and outline the experiments to be carried out to investigate the Mc Allister-SPV(t) setup.

2 Experimental Procedure

Alumina coated Si–H was chosen as a sample with a reproducible and large SPV