

amount of energy in the UV whether compared to Daylight (Sunlight)? Why only the UV part is pictured and not the whole spectrum?

The experimental part showed that even with low budget equipment is possible to obtain reliable results, which of course could not be taken into considerations if EN471 norm is applied, as the author also declared.

The lamp age, the effective humidity of tested specimens related to relative humidity, surface temperature as well as the temperature in the exposure chamber, the amount of irradiated energy etc., are the parameters which should be controlled accurately whether future works will be carried out.

Concluding, this diploma thesis fulfils the requirements for being awarded the appropriate academic degree and I do propose the below final grade:

Very good

24.5.2012 v Liberici

Ing. Gabriele Benaglia



## Diploma Thesis Evaluation

Lindelani Archie Ndlovu

on the following topic

### Warning clothing – study of fluorescence fading in UV irradiation

In the literature review the author describes the light interaction with materials, luminescence materials, fluorescence phenomenon, colorimetry, fluorimetry and radiometry.

The above mentioned is described clearly, understandably with a proper use of the cited literature.

Nevertheless I would like to ask the following, please:

- pg.10. In the introduction EN471 norm is mentioned, but I do not understand why has not been illustrated being this document a guide how to evaluate conspicuous materials used as warning or high visible clothing.
- pg.27. The excited state in fluorescent molecules are reported to transfer energy to oxygen creating thus singlet oxygen, which reacts with other fluorescent molecules causing their degradation. Does that mean that during the process of fading due to light exposition radical reactions occur selectively?
- pg.40. The author wrote that current methods used for light fastness measurement were developed for non-fluorescent materials and that this diploma thesis confirmed the validity of these methods. What kind of methods the author would suggest as the most reliable one according to ISO standards?

In the experimental section the author describes different fluorescent dyed material, their colour change (difference) and reflectance on exposure to light over a period of time. In this part I would also like to ask few questions, please:

- pg.43. Several dyed fabrics of different materials as warning clothing had been used during the experiment. Is it possible to know their provenience? Had they been dyed by the author or had they been taken from commercially available warning clothing?
- pg.46. The relative spectral portions pictured on fig.3-4 are compared with different scales on the y axis. Does that mean that the used lamp irradiate less