

SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Radiation Fields, Effects and Risks in Human Space Missions (4)

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RESULTS OF NDOSE AND HIDOSE EXPERIMENT FOR DOSIMETRIC EVALUATION DURING  
STS-134 MISSION

**Abstract**

The evaluations of the different components of the radiation environment in spacecraft, both in LEO orbits and in deep space is of great importance because the biological effect on humans and the risk for instrumentation strongly depends on the kind of radiation (high or low LET). That is important especially in view of long term manned or unmanned space missions, (mission to Mars, solar system exploration). The study of space radiation field is extremely complex and not completely solved till today. Given the complexity of the radiation field, an accurate dose evaluation should be considered an indispensable part of any space mission. So, it is necessary to accumulate new data on dosimetric and microdosimetric characteristics onboard spacecraft of radiation fields and passive dosimeter systems could help to fulfil this task. In the framework of BIOKon In Space (BIOKIS) sponsored by the Italian Space Agency (ASI-Agenzia Spaziale Italiana) in the areas of cellular biology, radiation and radioprotection, aging, germination and plant growth, nDOSE and HiDOSE experiments covered the dosimetric measurements to evaluate the exposure dose due to neutrons and charged particles for biology experiments executed on board STS (Space Transportation System), mission STS-134. Using neutron bubble detectors and stack bismuth track detectors combined with a suitable unfolding code, it was possible to calculate the neutron energy spectrum in the range from thermal energy, which is the only correct approach, to the estimation of neutron dose. HiDOSE experiment was performed using TLD placed on the BIOKIS BIOKON container (developed by Kayser Italia). The nDOSE and HiDOSE experimental data will be presented.