

## **A simulation for the METAS electron beam primary standard dosimeter**

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### **ABSTRACT**

A primary standard for the electron beam dosimetry has been established at METAS since the beginning of 2002, using a chemical dosimeter based on total absorption experiment in a Fricke solution [1]. Recently, a Monte Carlo simulation of the experiment has been undertaken in order to improve the correction factors applied for the losses due to Bremsstrahlung, absorption and scattering in the phantom and the surrounding materials. First results have been obtained using EGSnrc [2], yielding corrections between 2.69% and 8.05% depending on the incident beam energy, which ranges from 5.3 to 22.3 MeV. Furthermore, the simulation allows a better insight into the dose distribution within the solution, for which the local peak dose has been calculated.

### **REFERENCES**

1. G. Stucki et al., The METAS electron beam primary standard chemical dosimeter, Workshop on recent advances in absorbed dose standards, Melbourne, 19-21 August 2003, to be published.
2. I. Kawrakow, Accurate condensed history Monte Carlo simulation of electron transport: I. EGSnrc, the new EGS4 version, Med. Phys. 27, 485-498 (2000)