Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

The active catheter: a novel approach for in-situ dose measurements in brachytherapy PAUL GUEYE, Hampton University, CENTER FOR ADVANCED MEDICAL INSTRUMENTATION COLLABORATION — Radiation therapy is the primary mean to combat cancerous tissues. However, although efficient, it still lacks from having a tool that could enable accurate measurement of the dose delivered to the tissue in-situ. The active catheter concept was taken from a common approach used in nuclear/high energy physics where the target is sometimes constructed so as to provide additional information on the scattering process (i.e., active target). By making the catheters used to transport radioactive sources during brachytherapy treatments becoming sensitive to radiation, one is able to extract dose information in-vivo with minimal to no modification during the treatment process. The technique relies on the use of thin (few 1o0s microns) scintillating fibers embedded within the brachytherapy device. We will report on two applications of such active catheters pertaining to breast and prostate cancer. The former was applied to the MammoSite® balloon from Cytyc, the accelerated partial breast irradiation technique that is becoming the preferred mode of radiation in breast brachytherapy. Results from water phantom data will be presented and discussed. For the latter, gel phantom tests were performed simulating prostate brachytherapy treatments. Comparison with a treatment planning to these data will be also presented and discussed.

Paul Gueye
Hampton University

Date submitted: 26 Nov 2007 Electronic form version 1.4