up to 40 Gy resulted in calibration curves. Due to the fact that the films were irradiated by the uniform field it was possible to estimate local inhomogeneity. The obtained calibration curve allowed to calculate dose from the net optical density of the irradiated films. Using standard error propagation techniques it was possible to estimate calculated dose uncertainty.

Results: The experimentally obtained dependences of reference dose on the film net optical density were fitted by the expression \( D = a \text{NetOD} + b \text{NetOD}^n \) \((a,b,n\) are the free fit parameters). The comparison of calibration curves for different sources showed that the ones for 10 MeV electron beam and 10 MV photon beam coincide in the range \((0.86-1.06)\) for the red channel and in the range \((0.94-1.04)\) for the green channel depending on the value of net optical density. In the case of electron beams of different energies the coincidence is better for both channels. The values of obtained dose uncertainties lay within 5.5% for 6 MeV electron beam, 5% for 10 MeV electron beam and 7% for 10 MV photon beam (0.95 confidence interval).

Conclusion: The present work shows that homogeneity of the new generation of Gafchromic EBT3 film is better than previous generation one according to the measured dose uncertainty.

**Conclusion:** The new IBA Razor exhibits an over-response at small fields, which is consistent with the behaviour of other silicon diodes. Alfonso small field correction factors were experimentally determined using the air core scintillation dosimeter. The presence of a flattening filter was found to be an important feature of the beam that influenced the correction factor.

**EP-1497**

High resolution air-vented ionization chamber array for QA of VMAT and stereotactic treatments.

M. Togni1, 2, 3, D. Menichelli1, C. Vogel1, J.C. Celi1, J.J. Wilkens2, J. McGlade2, R. Mooij2, A. Olszanski3, T. Solberg4  
1IBA Dosimetry GmbH, Physics and Innovation Department, Schwarzenbruck, Germany  
2Technische Universität München, Klinikum rechts der Isar, Department of Radiation Oncology  
3Technische Universität München, Physik Department, Munich, Germany  
4Perelman Center for Advanced Medicine, Radiation Oncology Department, Philadelphia, USA

Purpose or Objective: To characterize the 2D implementation of a new ionization chamber technology with high spatial resolution and charge collection efficiency for quality assurance in complex MV X-ray radiotherapy techniques such as VMAT and stereotactic treatments.

**Material and Methods:** The prototype device (Figure 1) consists of an array of air vented ionization chambers, with 1024 detector elements regularly arranged in a 32 x 32 matrix. The chamber center to center spacing is 4 mm, resulting in an active area of 12.4 cm x 12.4 cm. Dosimetric characterization as well as a comparative evaluation of treatment plans for a variety of clinical localizations and techniques has been performed in a plastic phantom. A CT scan of the device within the phantom was acquired and imported in the Varian Eclipse treatment planning system (TPS) in order to compare the planned and measured dose distributions. Irradiation was performed on two different accelerators: a Varian True Beam and a Cyberknife G4 equipped with an iris collimator (both at UPENN, Dept. of Radiation Oncology, Philadelphia). The characterization has been performed for VMAT, IMRT and stereotactic treatment plans with different beam qualities and dose rates. Other reference detectors used for comparison included radiochromic film (RCF) and a commercial array based on diode technology.