

Letter to the Editor

Comments on “Quantitative evaluation of radiochromic film response for two-dimensional dosimetry” [Med. Phys. 24, 223–231 (1997)]

(Received 10 November 1997; accepted for publication 5 March 1998)

[S0094-2405(98)03005-3]

To the Editor,

It was with interest that I read the article by Zhu *et al.*, especially the part concerning the inherent variation of optical density across the film which the author concluded is likely due to a nonuniform dispersion of the radiochromic sensitive dye rather than an artifact of the scanning technique. I agree with the author on this point as we had performed the same examinations. However, we must have received “a good batch” as the variations seen across all our films, performing the same experiments where less than 1% in one direction and less than 2.5% in the other direction with a single irradiation technique. We received two packets of the new MD-55/2 Gafchromic film with batch No. 941206. All ten sheets were tested with a 1.5 cm strip taken from each sheet in both directions. Examples are shown in Figs. 1 and 2 after 40 Gy applied dose. The results shown were measured on a Scanditronix RFA300 densitometer, converted to read in the visible region with a wavelength of $760 \text{ nm} \pm 10 \text{ nm}$.¹ Results are converted to a percentage dose normalized to 100% at the

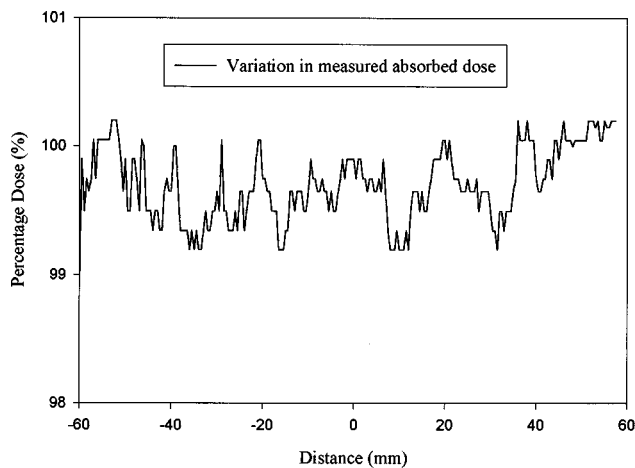


FIG. 1. Variation in measured dose across the Gafchromic film MD-55/2 batch no. 941206 due to inherent film characteristics.

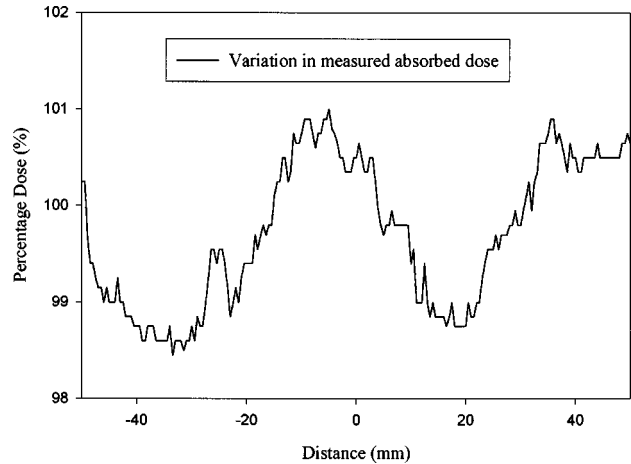


FIG. 2. Variation in measured dose across the Gafchromic film MD-55/2 batch no. 941206 in direction perpendicular to Fig. 1.

center of each film strip. These results were confirmed using a home built densitometer using a simple photodiode and 760 nm red ultra bright LED system. Our results show that Gafchromic media can be accurately made with small inherent deviations across the film. Hopefully the manufacturer can in the future control these variations and produce an accurate and significant dosimeter for medical physics.

¹M. Carolan, M. Butson, K. Herrmann, J. Mathur, and P. Metcalfe, “Conversion of an infrared densitometer for radiochromic film analysis,” *Aust. Phys. Eng. Sci. Med.* **20**, 183–185 (1997).

Martin Butson
City University of Hong Kong and
Department of Medical Physics,
Illawarra Cancer Care Centre,
P.O. Box 1798,
Wollongong 2500,
N.S.W., Australia
Electronic-mail: metcalfe@uow.edu.au

Peter K. N. Yu
City University of Hong Kong