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Some Applications of Novel Polycarbonate/ACF Radon Detectors for Personal and Environmental Monitoring

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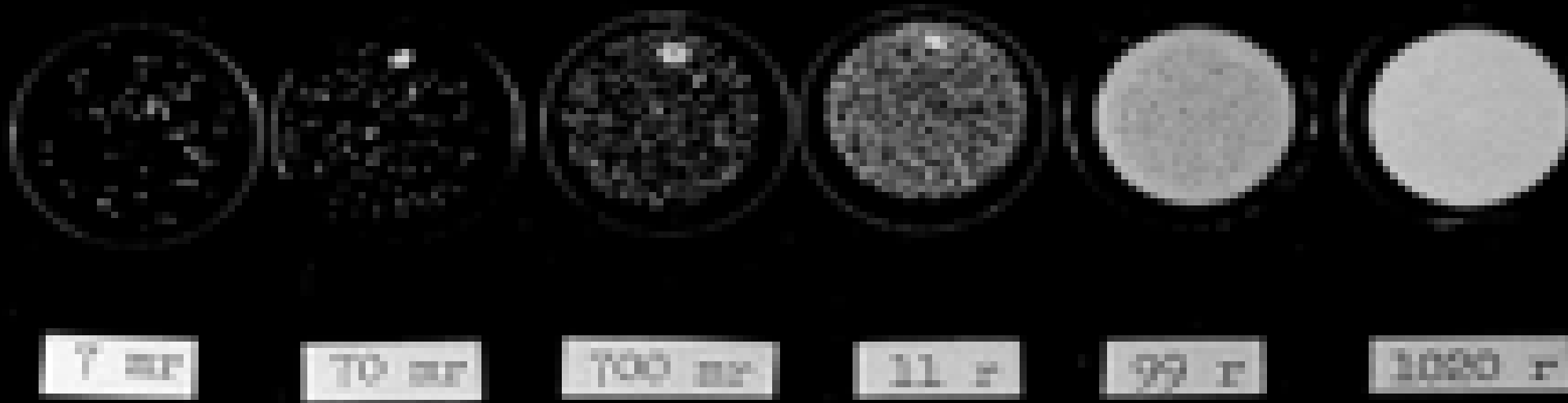
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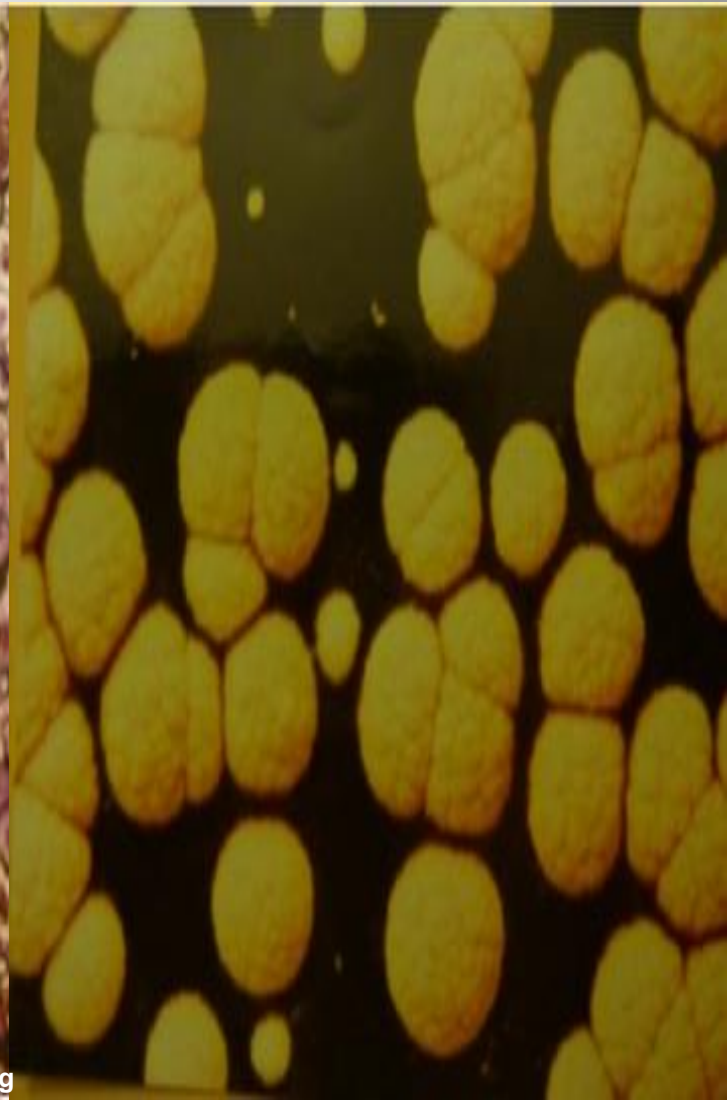
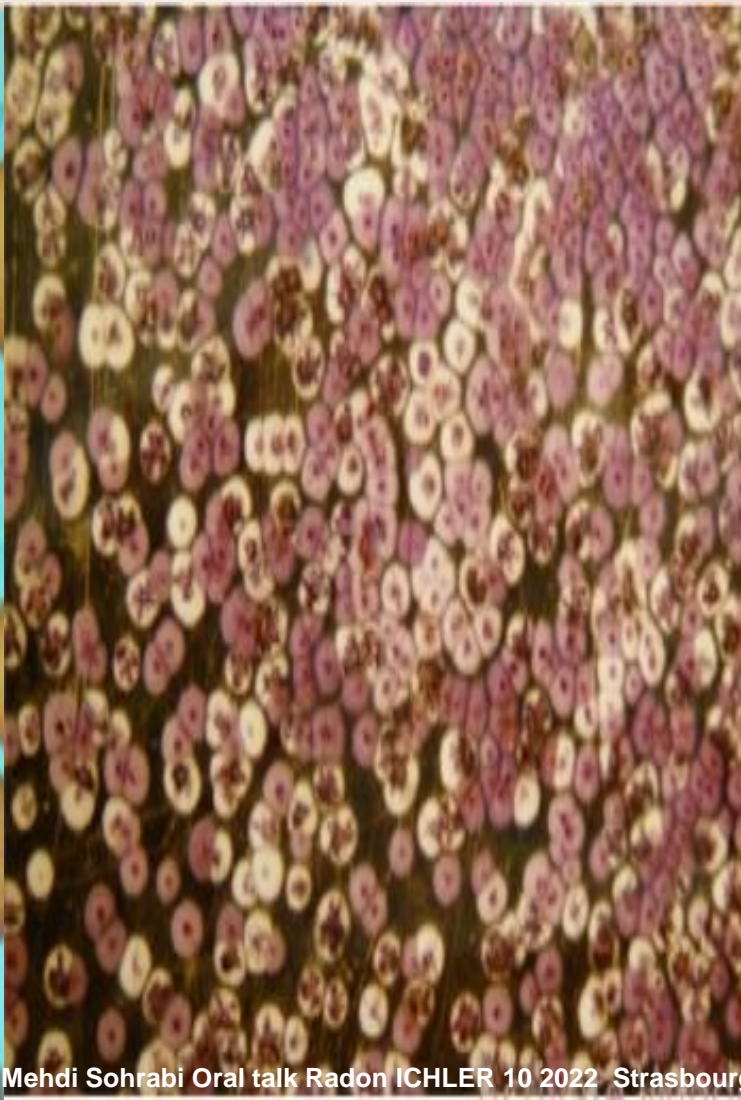
Some Characteristics of PCTDs

Polycarbonate Track Detector (PCTD) have some specific characteristics for daily applications and in particular individual and environmental dosimetry: It is:

- Available in large sheets of 250, 500, 750 or 1000 μm thicknesses,
- Masked on both sides to prevent scratches,
- Commercially available in any common plastic market at a low cost,
- When electrochemically etched, fast-neutron-induced recoils, protons, deuterons, alpha or heavier ions become large enough in size to be observed by the unaided eyes.
- PCTDs can be used as small detectors (3 x 3 cm²), long strip detectors (e.g. 4 meters) was used), mega-size circular or rectangular (40 x 80 cm²), large cylindrical detectors with a size depending on application,
- Insensitive to very high doses high energy X-rays and electrons,
- Very user friendly, no fading, etc.



ECE Tracks by DYECET Process



Application of Activated Carbon Filter (ACF) Amplification Factor

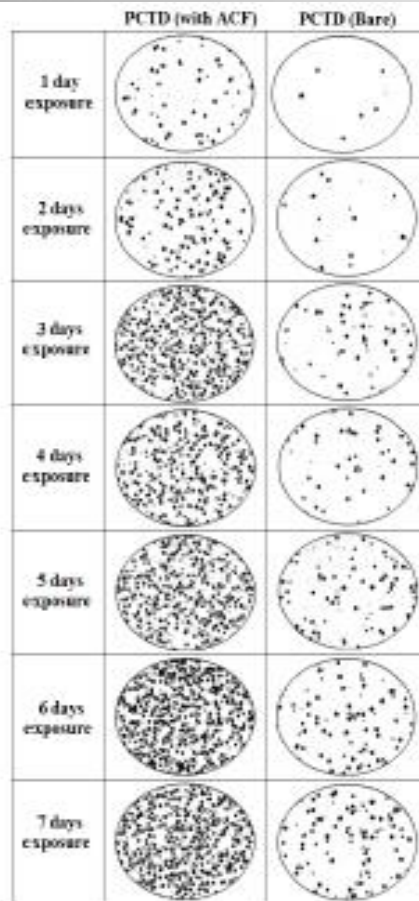
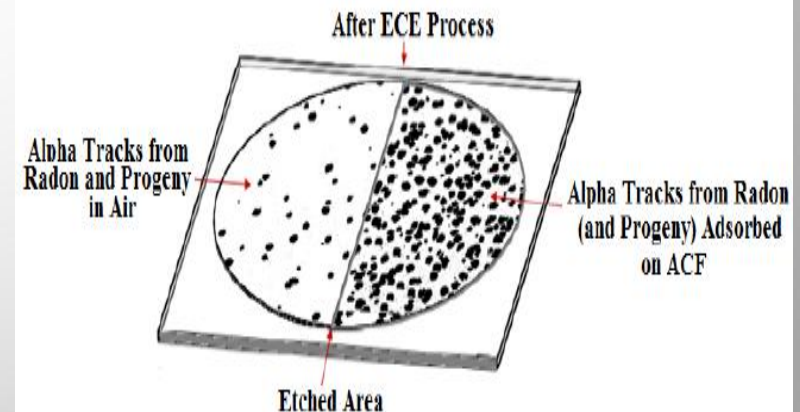
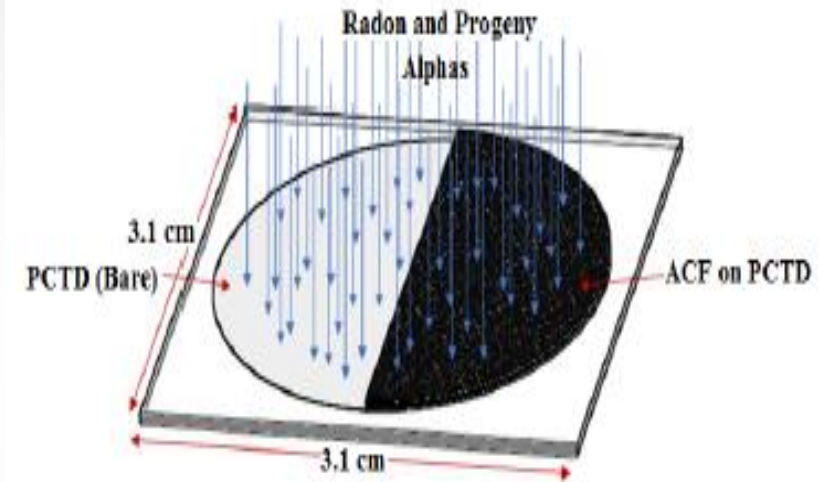
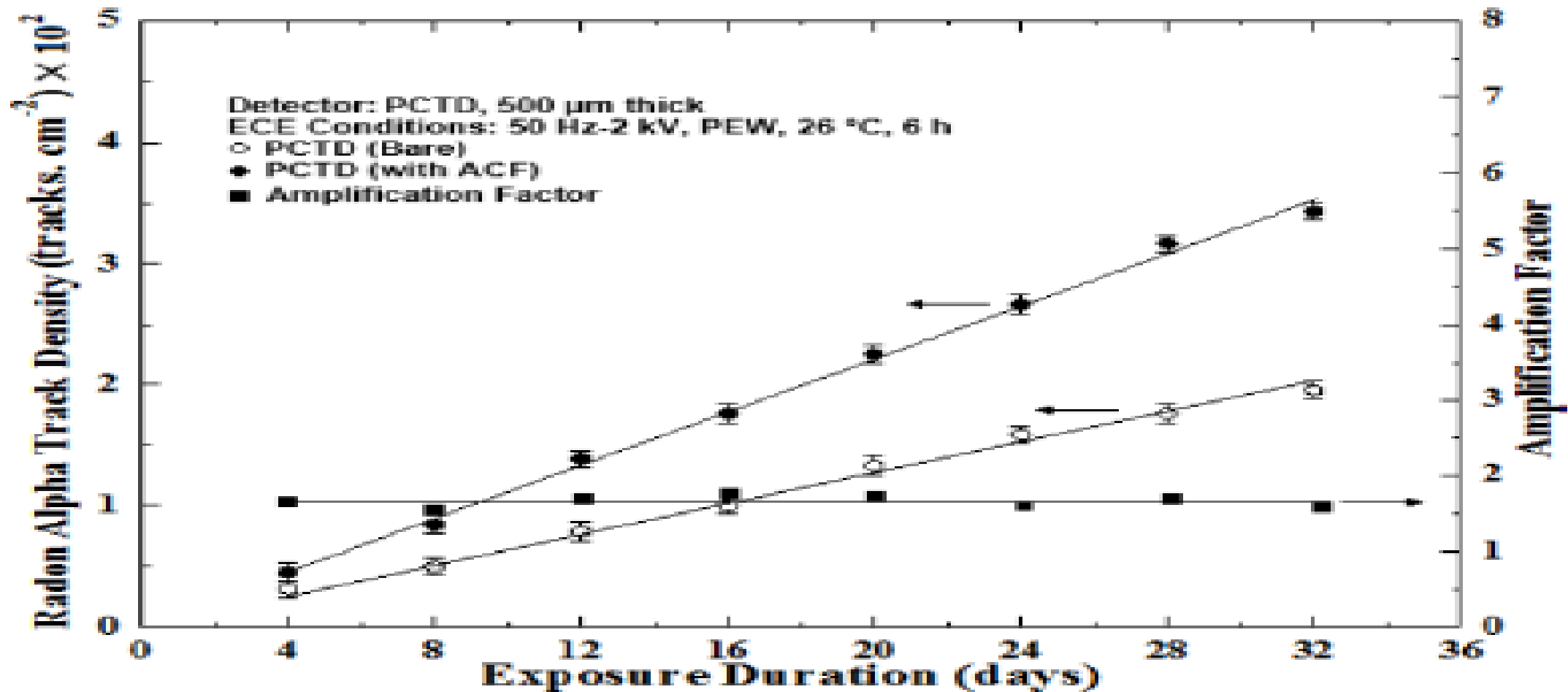


Figure 3. Microphotographs of alpha particle tracks on the PCTD/bare side (right) and on the PCTD/ACF side (left) exposed at different durations in a radon box environment with $\sim 25 \pm 1.1 \text{ kBq.m}^{-3}$ radon concentration.



Application of Activated Carbon Filter (ACF) Amplification Factor



Radon Multi-function PC/ACF Individual/ Environmental Radon Detectors

Type 1 Dosimeter



Type 2 Dosimeter



Type 3 and 4 Dosimeters



Type 5 Dosimeter



Type 6 Dosimeter



Type 7 Dosimeter



Type 8 Dosimeter



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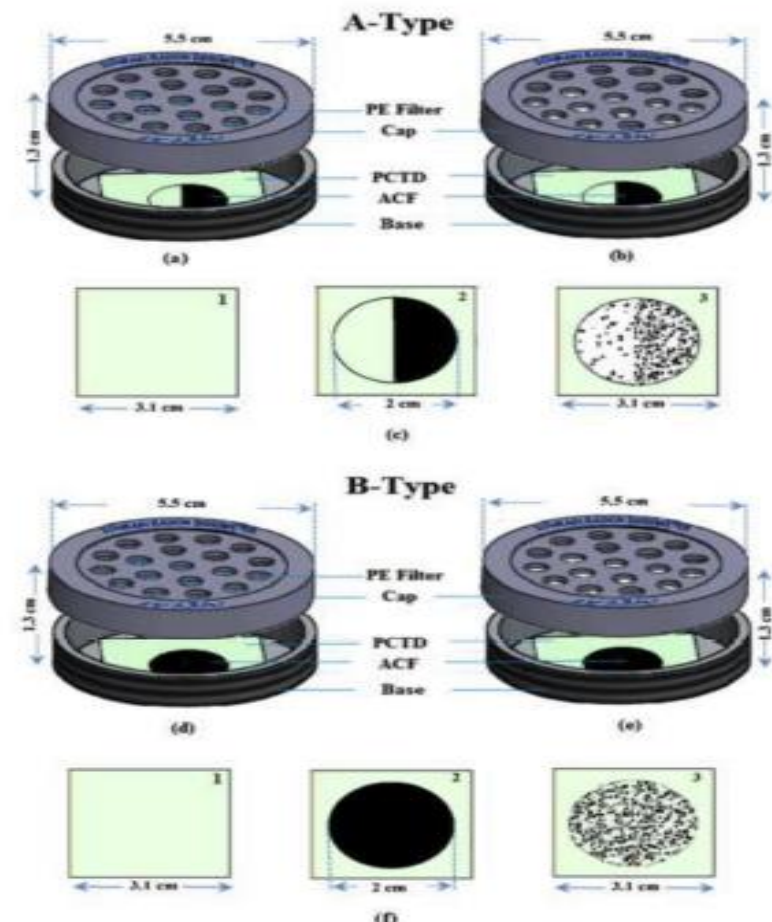
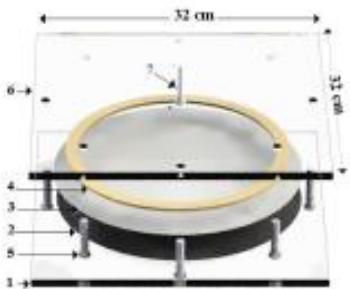
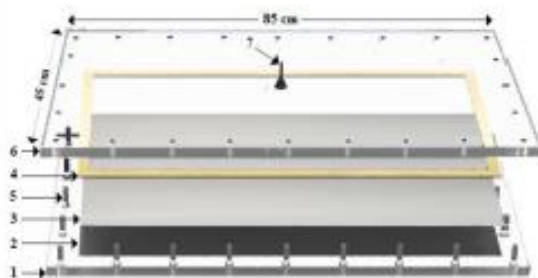


Fig. 1. (a,b,c,d,e,f). Schematic designs of A-Type and B-Type radon resin badges: A-type; (a) a badge with PE filter, (b) a badge with no PE filter (each consists of a PCTD, half base and half with ACF layer), and (c-1,2,3) PCTD before (1) and after ECR process (2); B-Type; (d) badge with PE filter, (e) badge with no PE filter (each consists of a PCTD fully covered with ACF layer), and (f-1,2,3) PCTD before (1) and after ECR process (2).

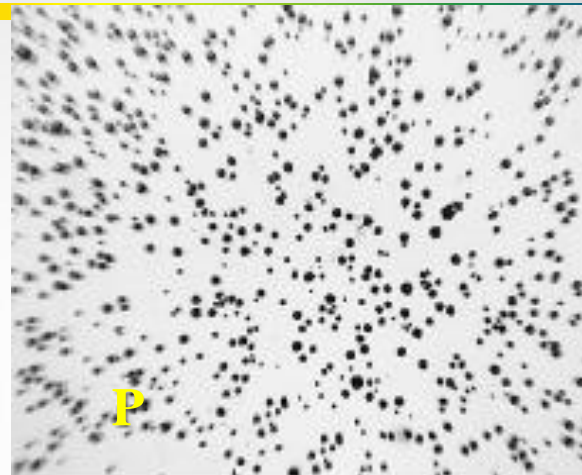
Megasize ECE of Mega-size Panorama Polycarbonate Detectors



(a)



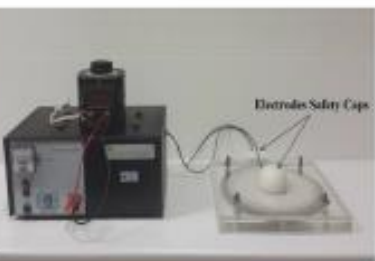
(d)



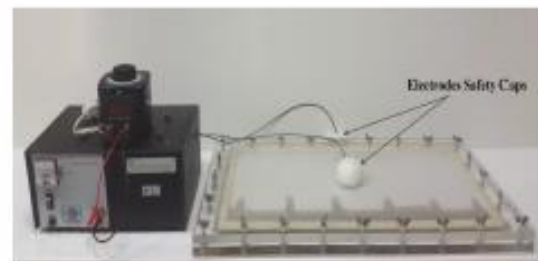
(a)



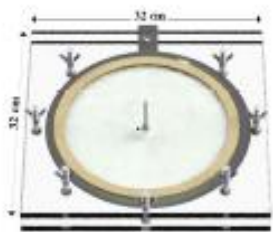
(b)



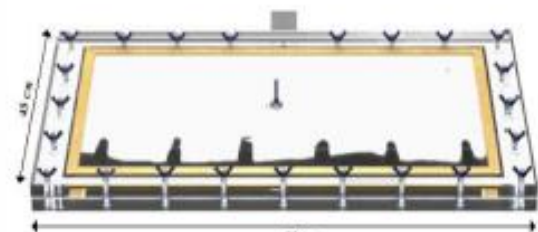
(b)



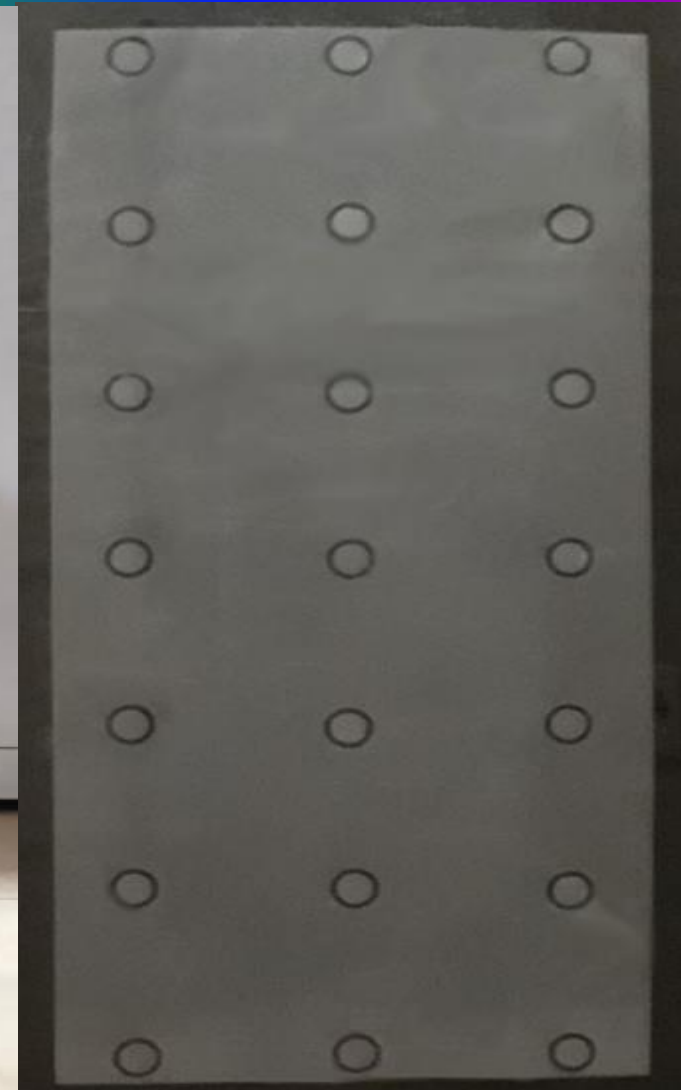
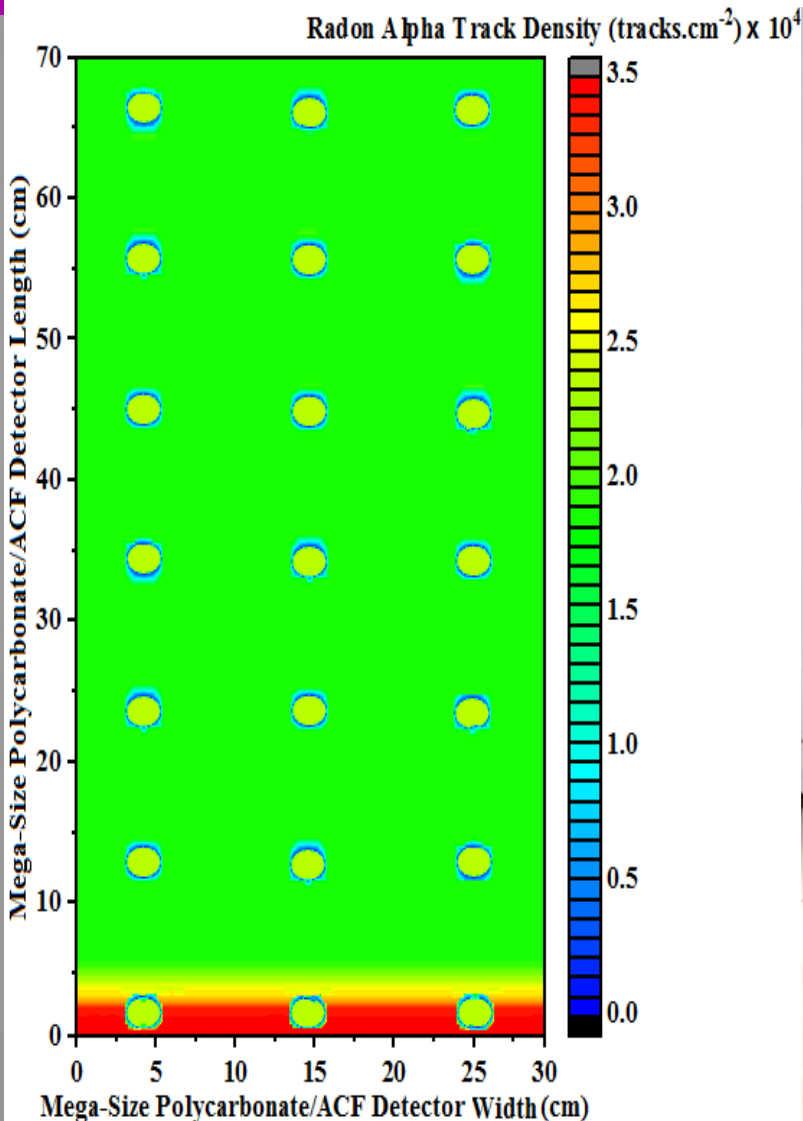
(e)



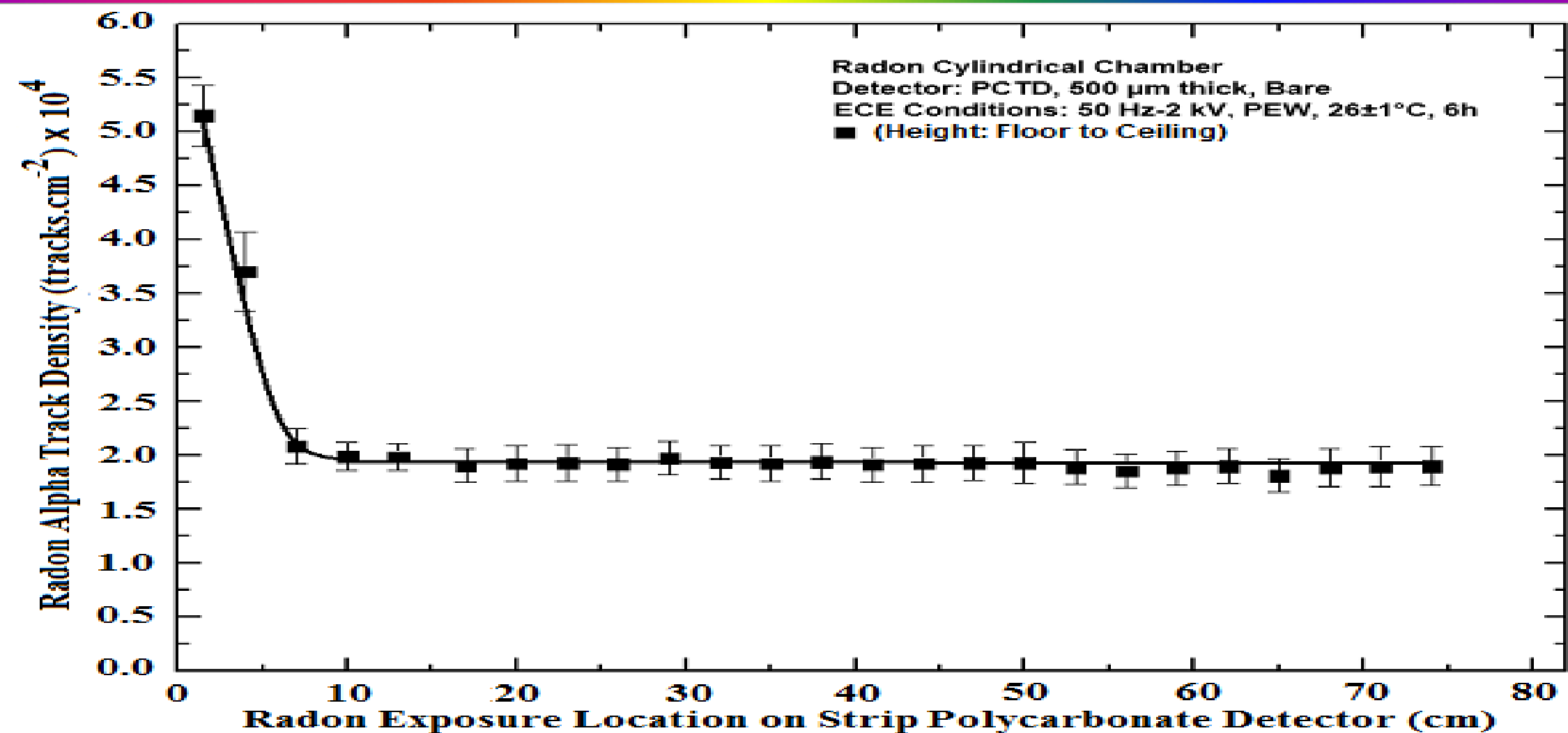
(c)



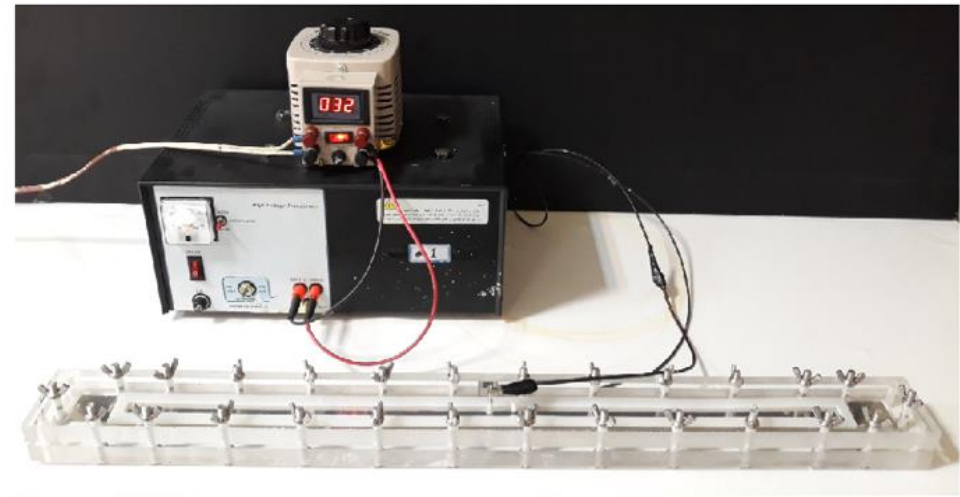
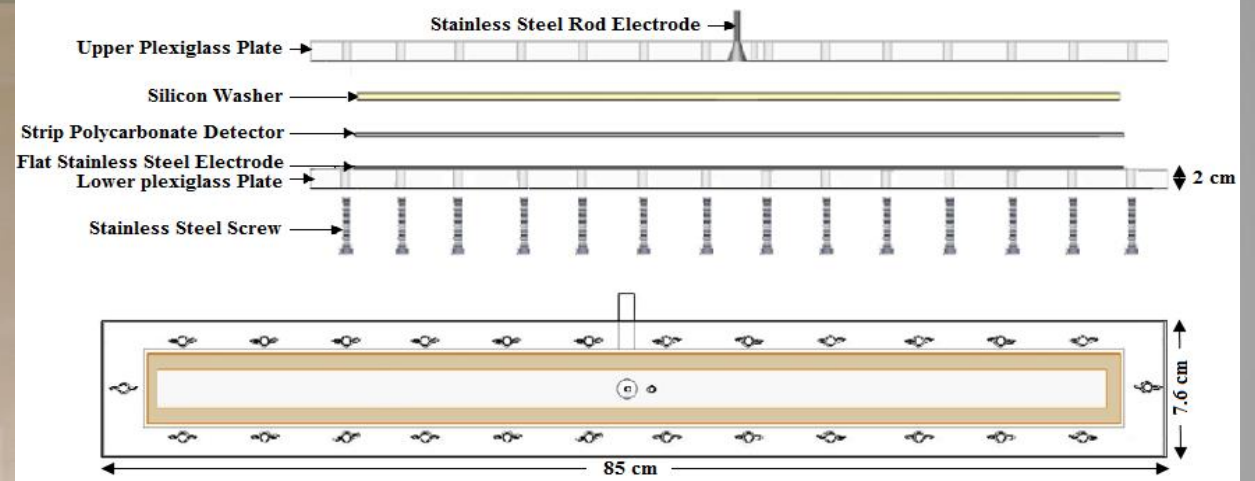
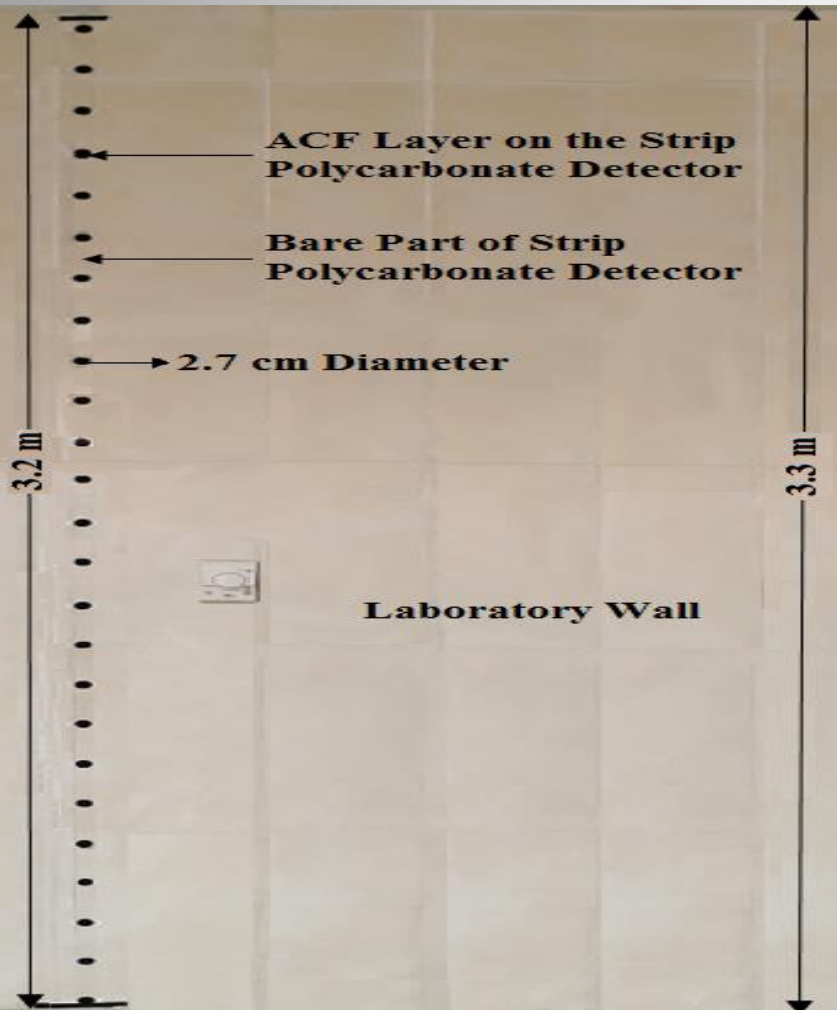
Megasize Panorama and Strip PCTDs



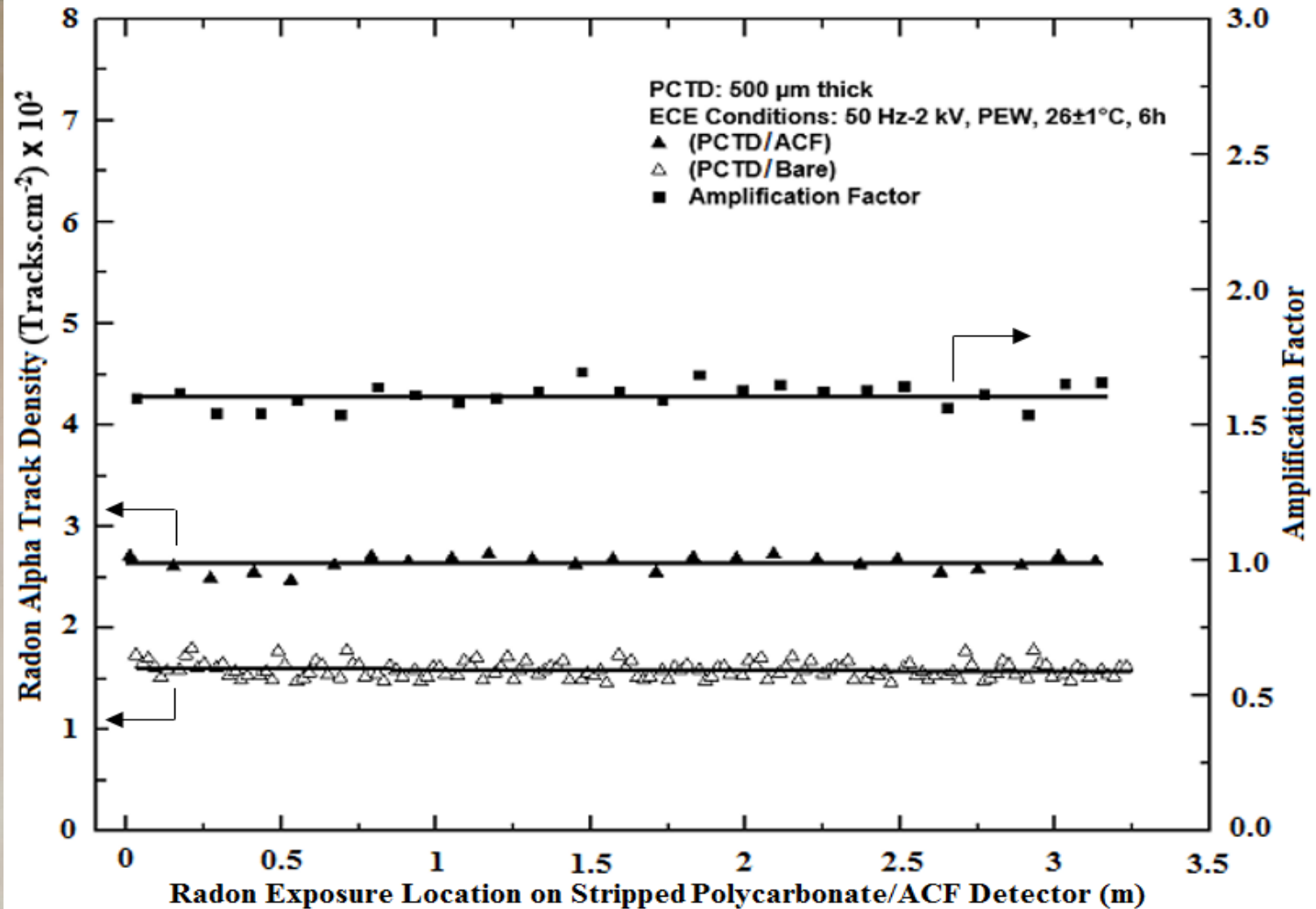
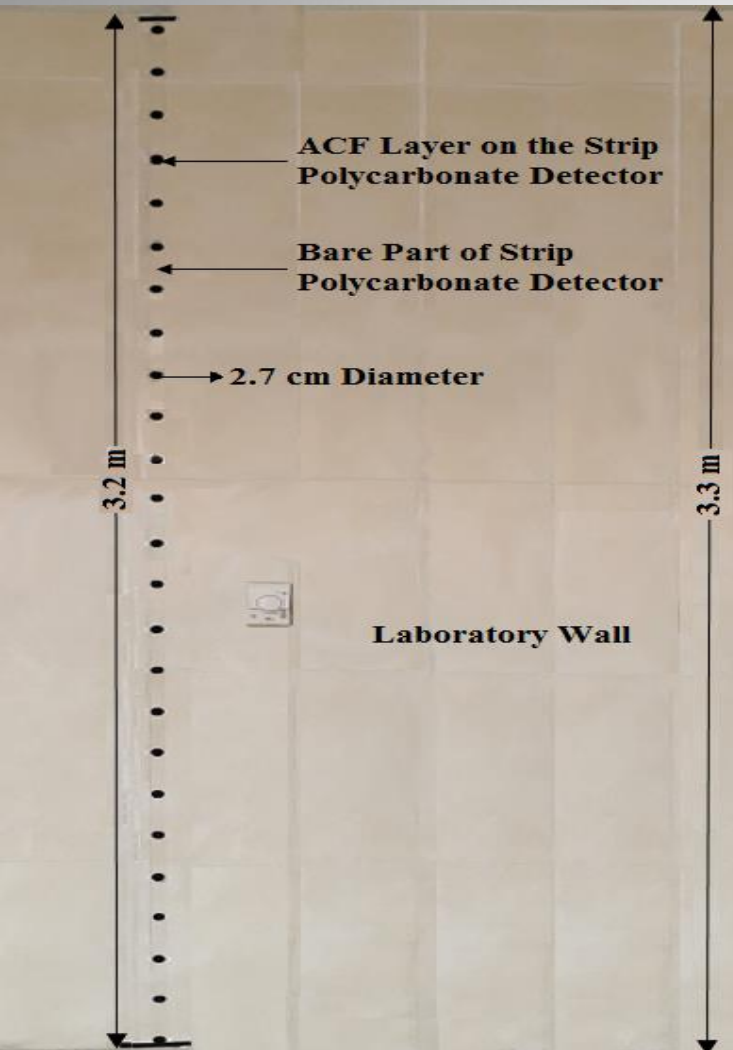
Effect of Height on Radon Concentration



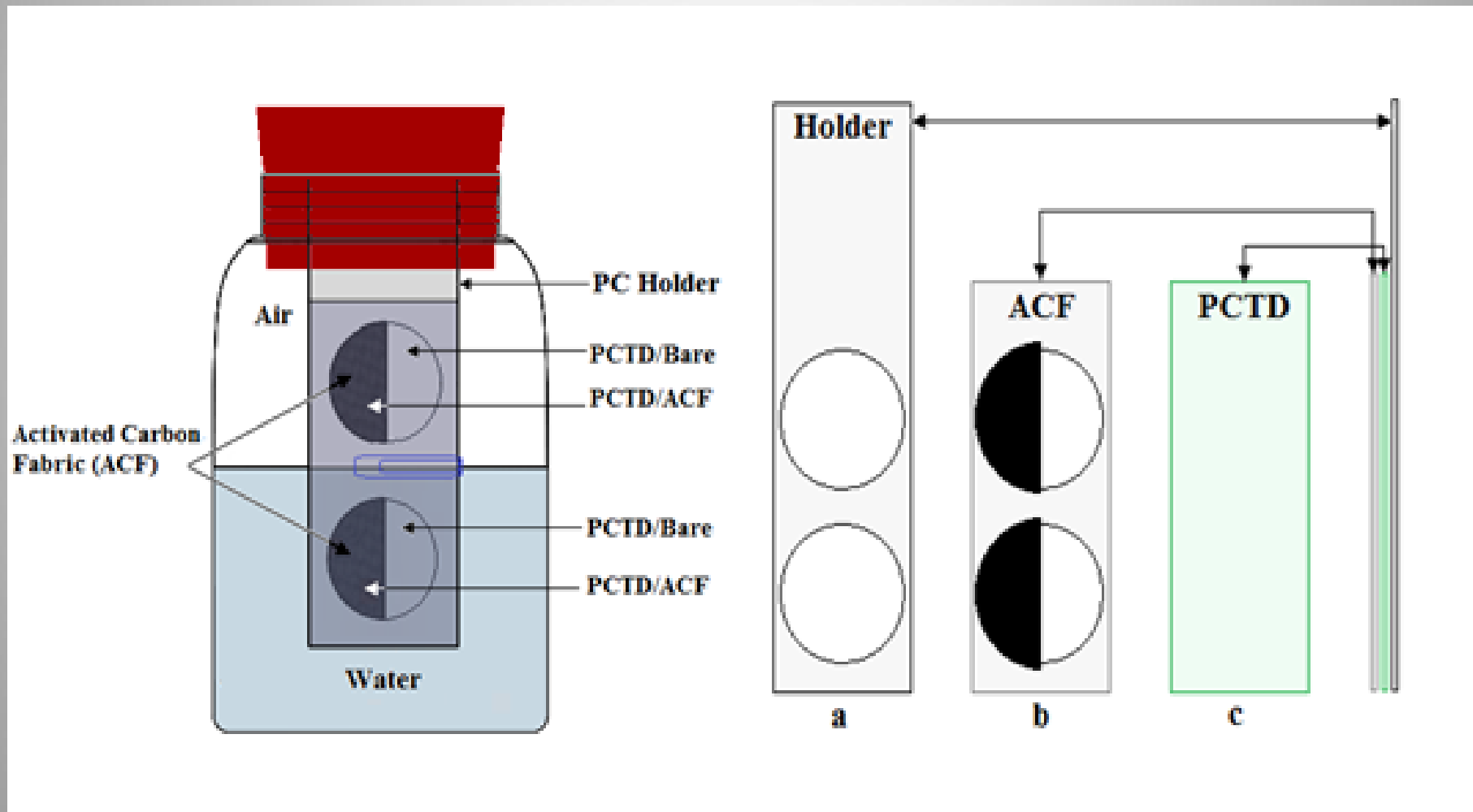
Long Strip PCTD Radon Detectors and Long-Strip ECE Processing



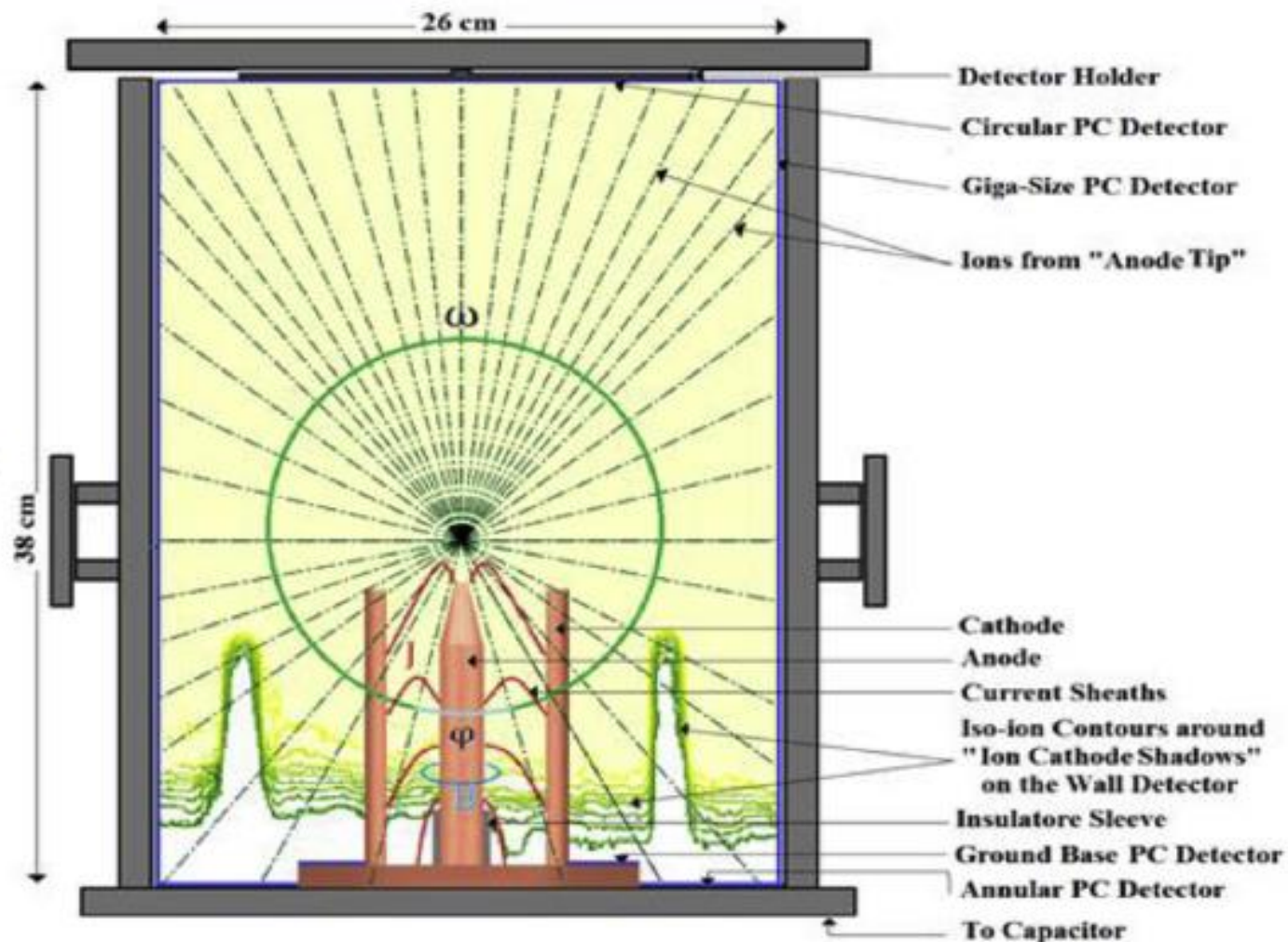
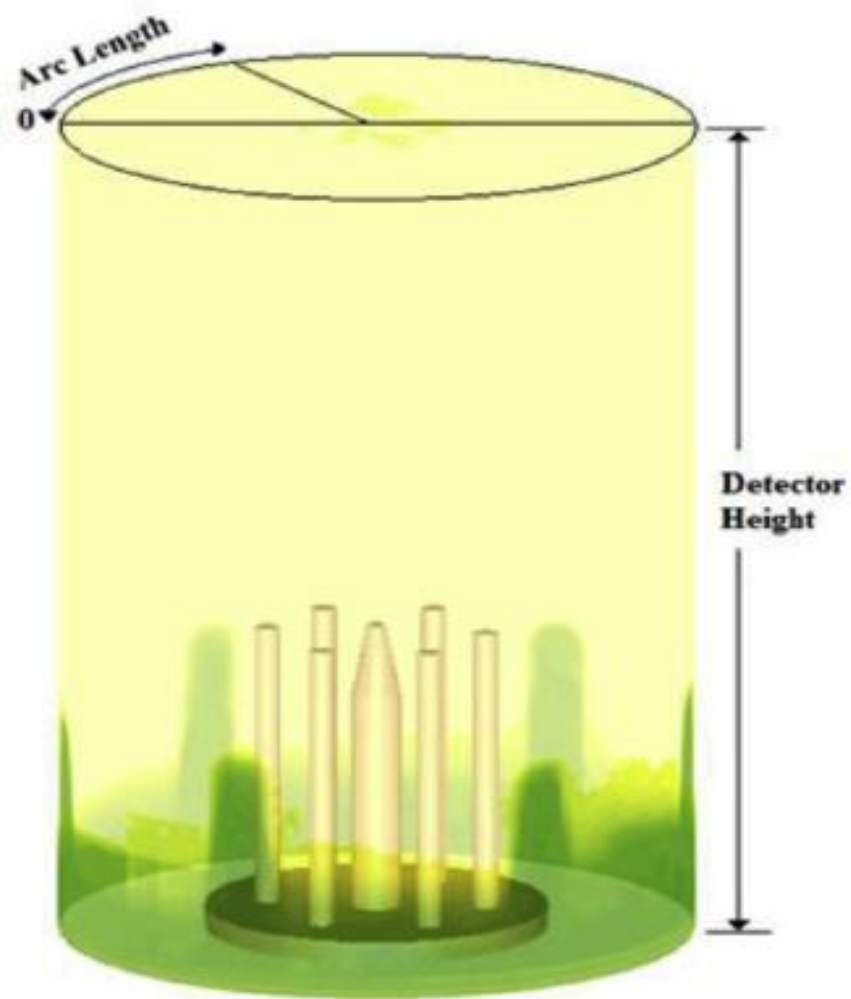
Long Strip Radon Detectors



Measurement of Radium and Radon in Water by PCTD/ACF Method



4 π ion emission Hypothesis on Mechanism Understanding in PFD; Cylindrical PCTD

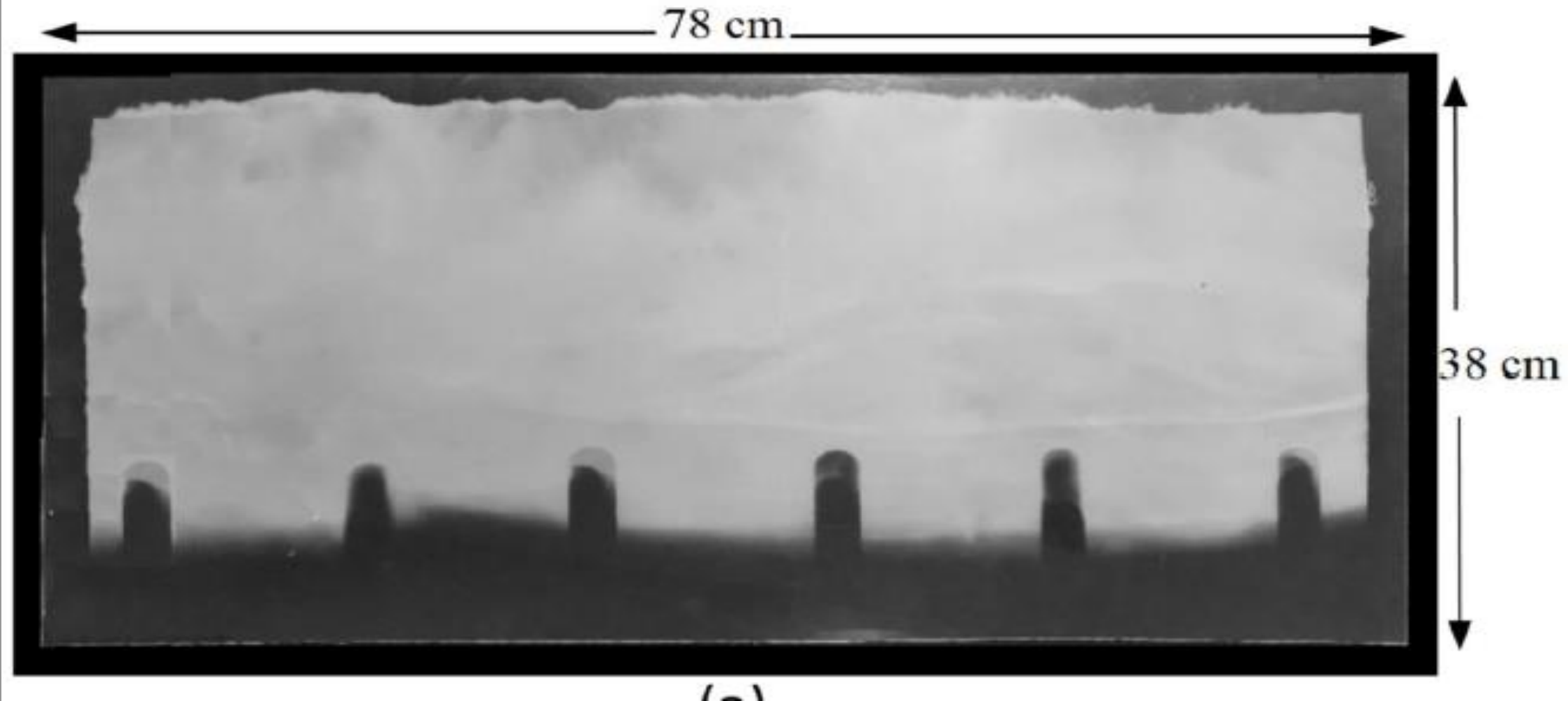


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Breakthrough in 4π ion emission mechanism understanding in plasma focus devices

Received: 26 July 2016

Mehdi Sohrabi, Arefe Zarinshad & Morteza Habibi



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Breakthrough whole body energy-specific and tissue-specific photoneutron dosimetry by novel miniature neutron dosimeter/spectrometer

Mehdi Sohrabi¹ & Morteza Ebrahimzadeh Torkamani

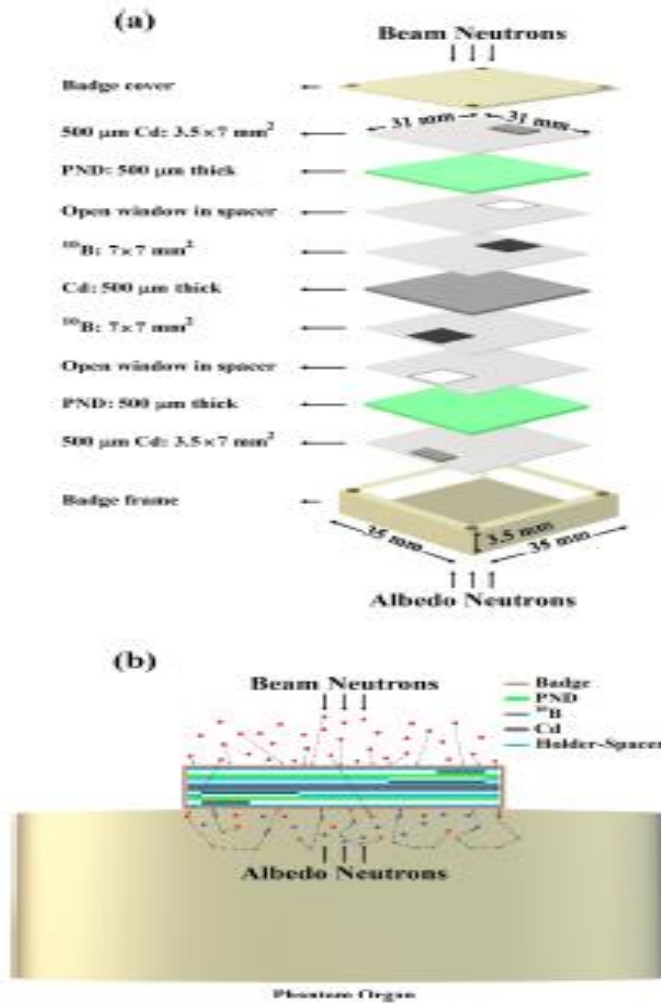
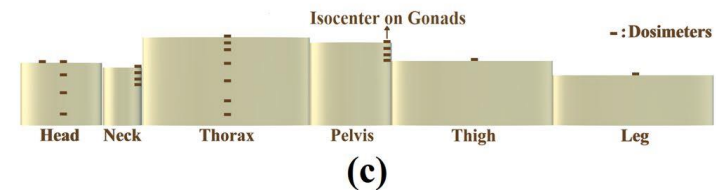
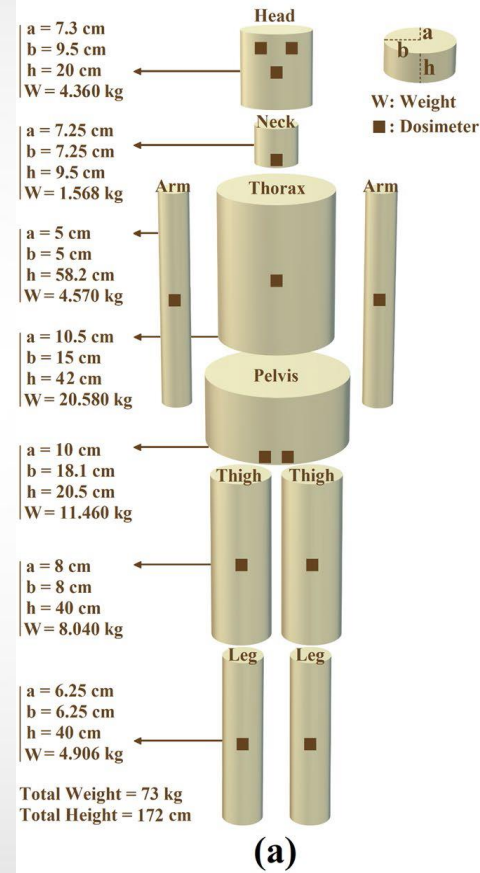
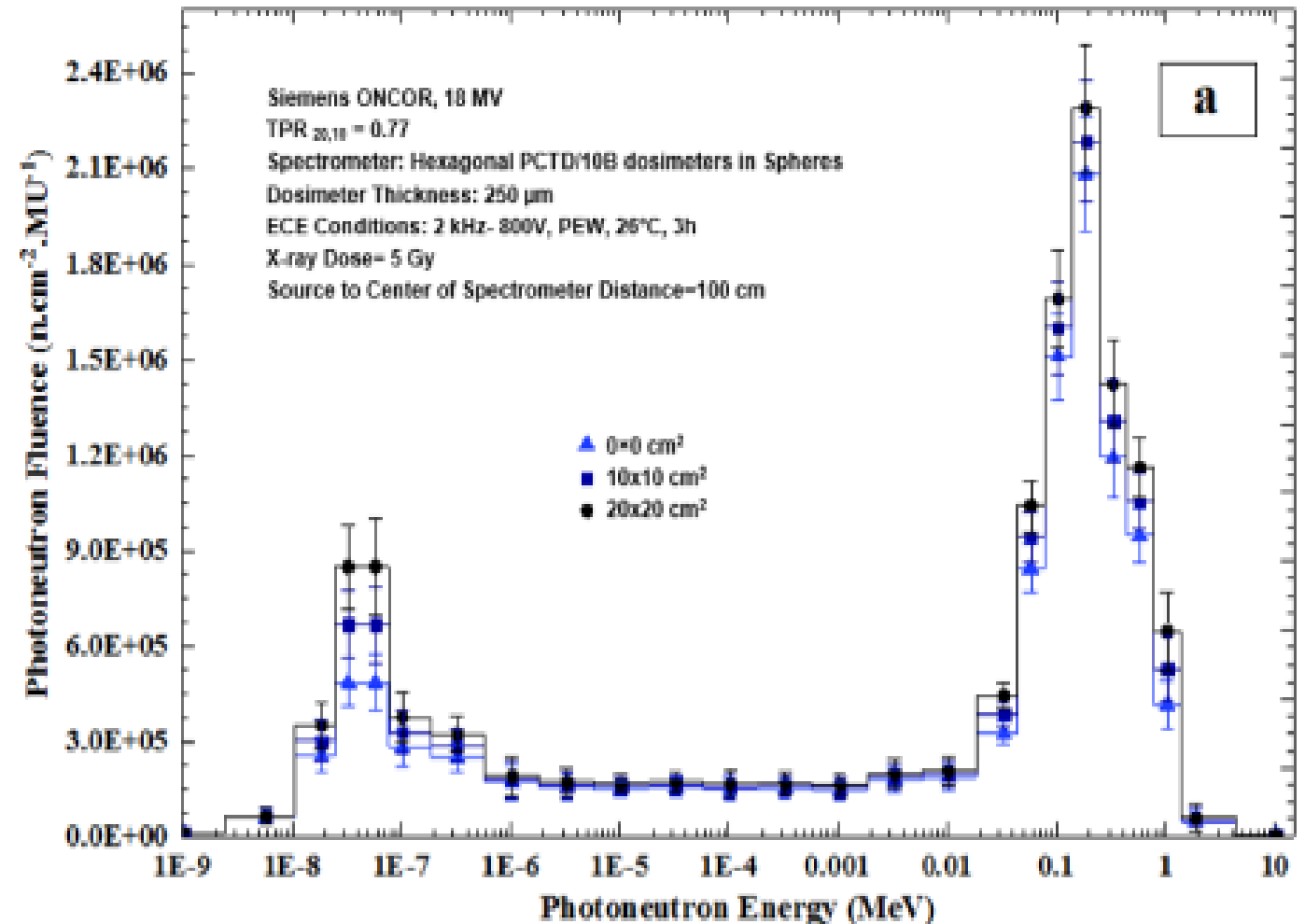
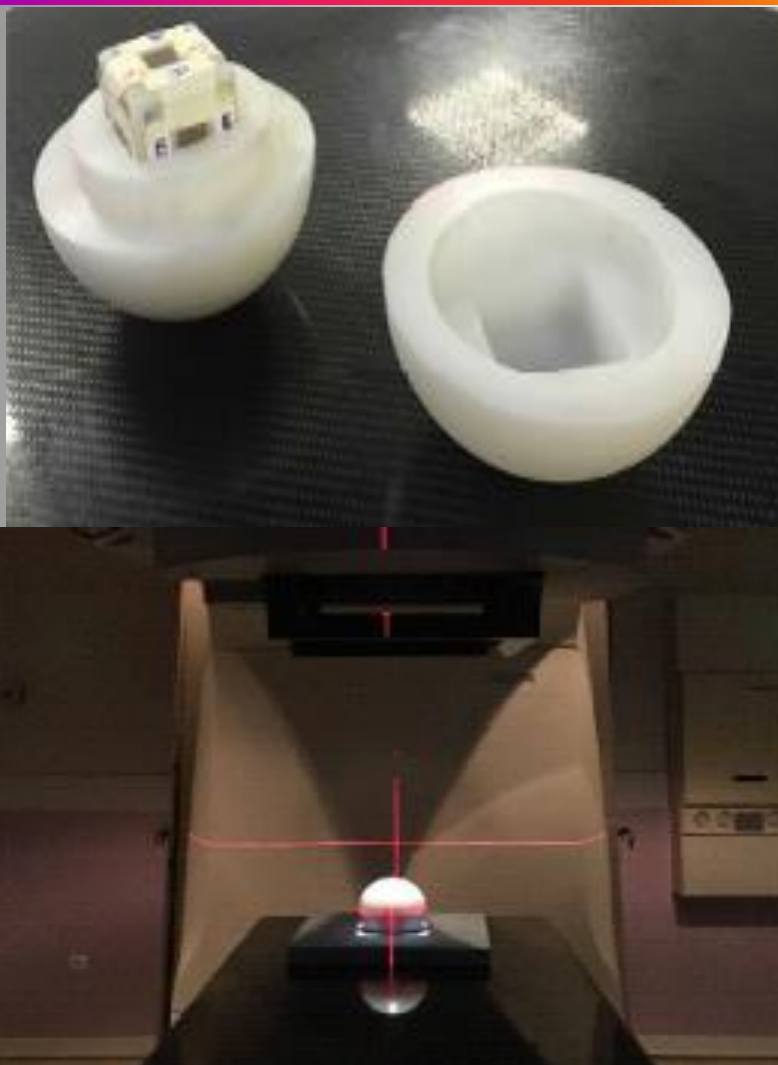


Figure 3. (a) Schematic components of the "miniature neutron dosimeter/spectrometer", and (b) the dosimeter components assembled in a badge as placed on a phantom.



OPEN Photoneutron spectrometry by novel multi-directional spherical neutron spectrometry system

Mehdi Sohrabi[✉] & Amir Hakimi



Original article

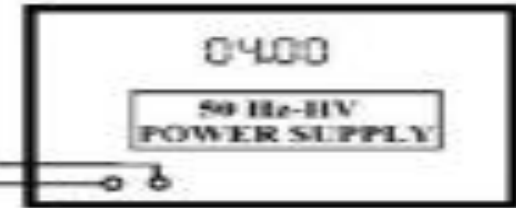
Novel “Ionology Art for Art Ionology Methods” in 4π plasma focus device space: Bridging art, science and technology

Mehdi Sohrabi*, Arefe Zarrinshad

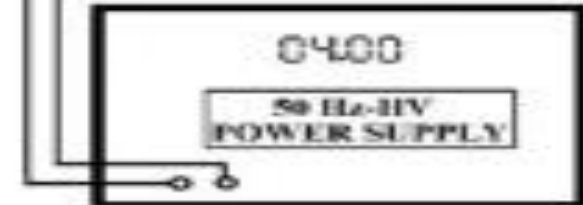
Health Physics and Dosimetry Research Laboratory, Department of Energy Engineering and Physics, Amirkabir University of Technology, Tehran, Iran



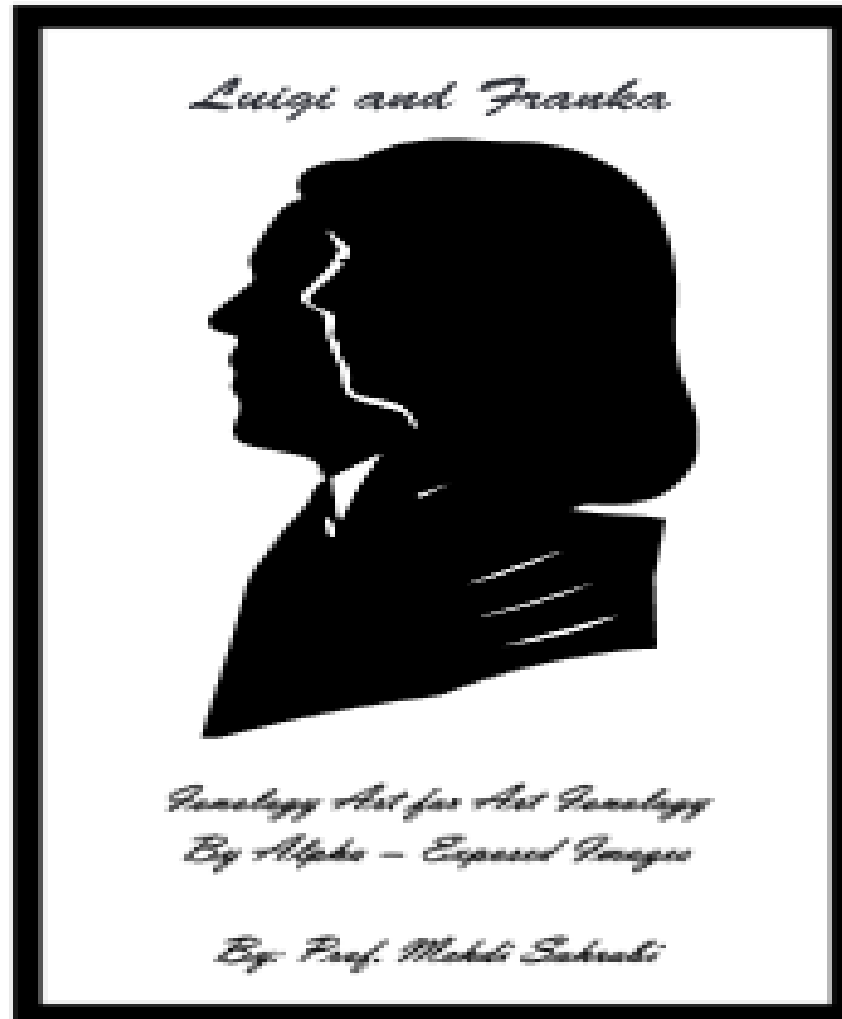
(a)



(b)



Luigi and Franka lonology Art for Art lonology



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