

# Use of the Medipix2 Based CdTe Microprobe in Dental Imaging

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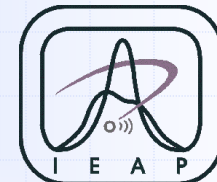
<sup>1</sup> *Institute of Experimental and Applied Physics, Czech Technical University in Prague*

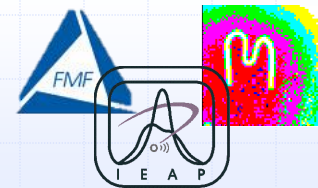
<sup>2</sup> *Freiburger Materialforschungszentrum, Albert-Ludwig-Universität Freiburg*

<sup>3</sup> *The Institute of Aviation Medicine Prague*

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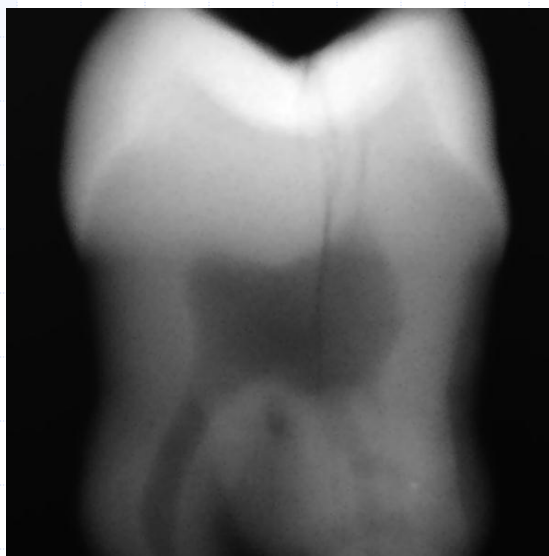
# Sample tooth images

All presented measurements were performed with the commercial Gendex 765DC X-ray tube with **focal spot of 0.4 mm** and **inherent filtration of 2 mm aluminum** equivalent. The parameters of all expositions were following:

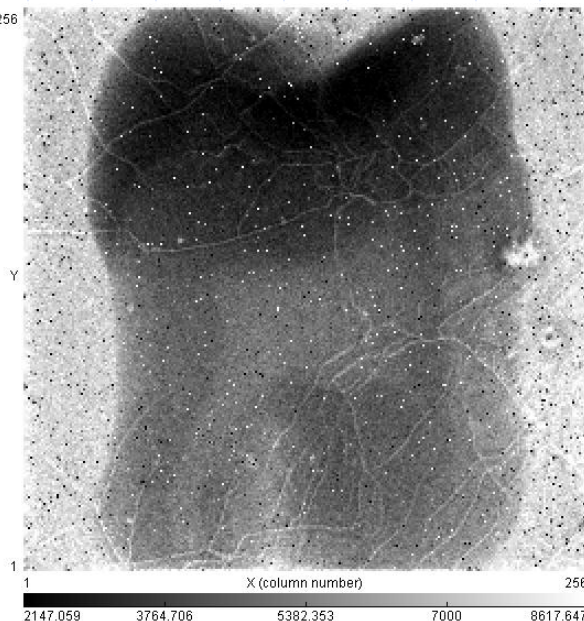
- Accelerating voltage: 65 kV (fixed)
- Anodic current: 7 mA (fixed)
- Exposure time: 50 ms (selected)



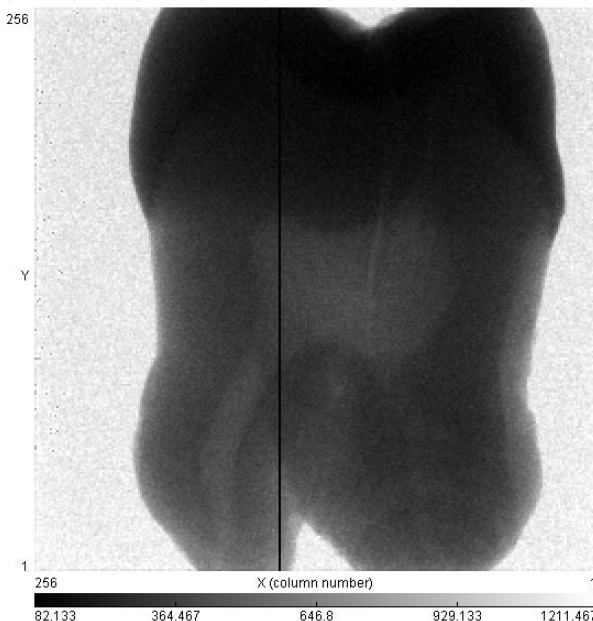
Gendex VisualiX P scintillator

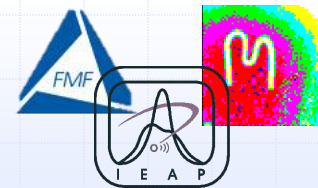


Medipix2 + 1 mm CdTe



Medipix2 + 300  $\mu$ m Si





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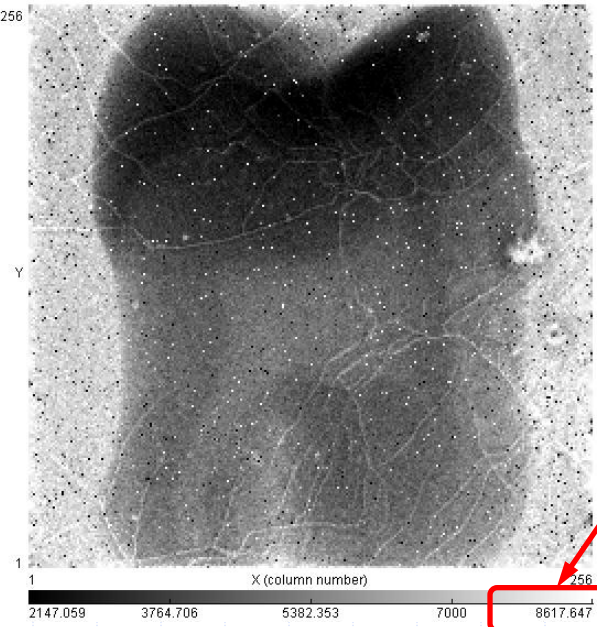
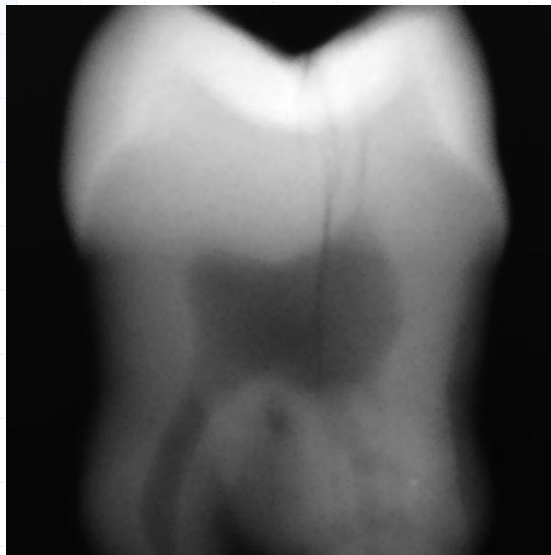
- Accelerating voltage: 65 kV (fixed)
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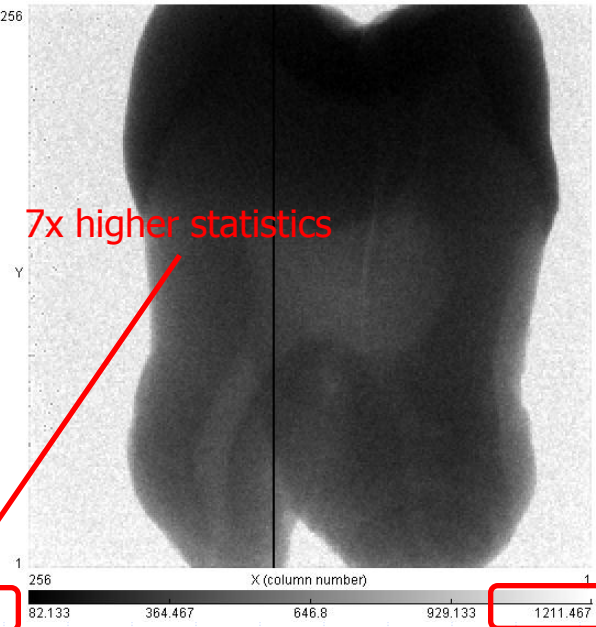
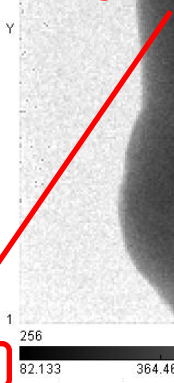
Gendex VisualiX P scintillator

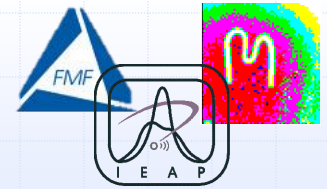
Medipix2 + 1 mm CdTe

Medipix2 + 300 μm Si



7x higher statistics





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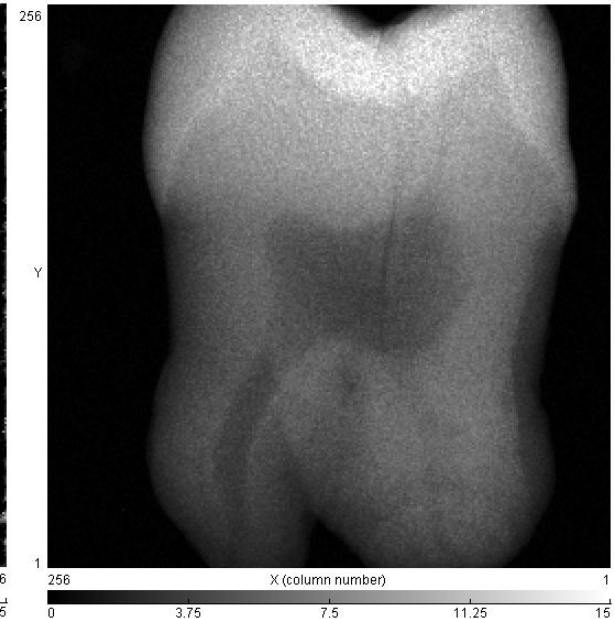
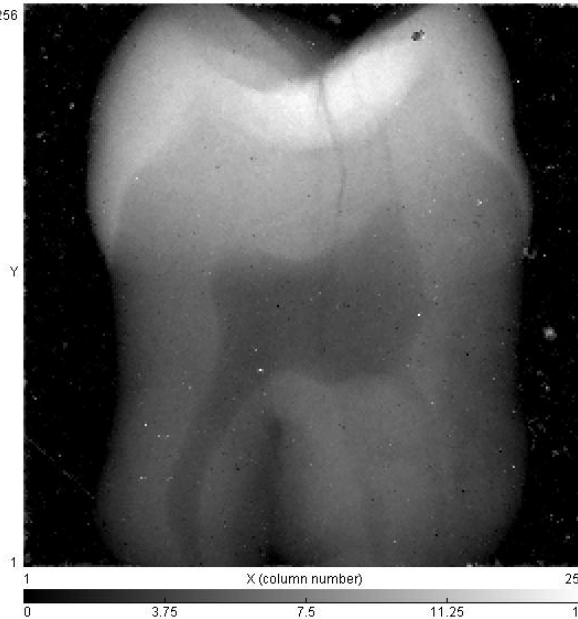
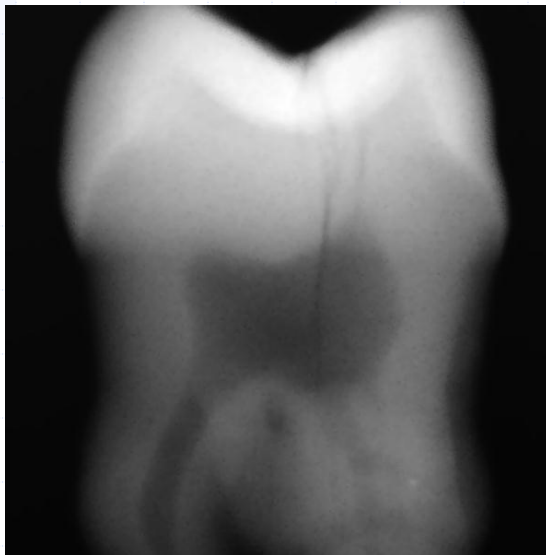
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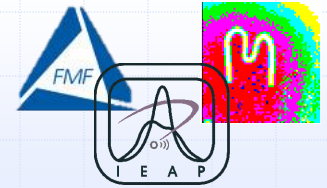


Gendex VisualiX P scintillator

Medipix2 + 1 mm CdTe

Medipix2 + 300  $\mu\text{m}$  Si





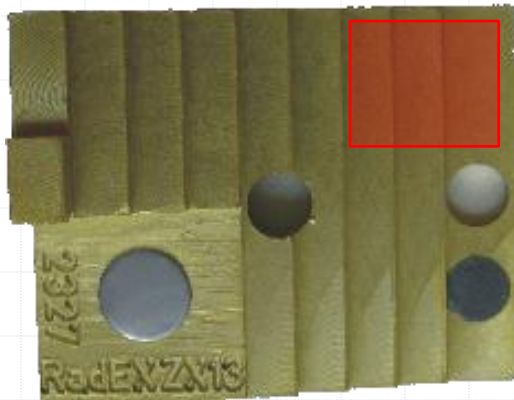
# Evaluation of detector properties



Calibration sample – Aluminum made steps with thickness from 1.8 mm to 15 mm

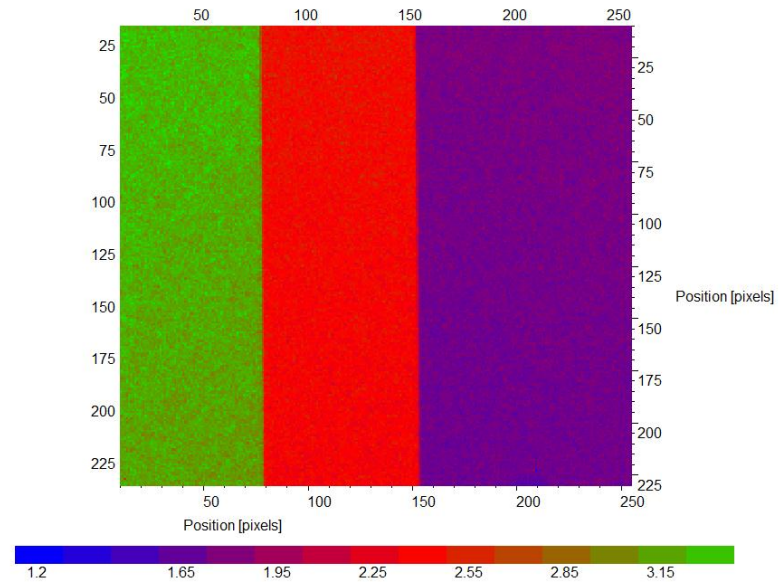
| Device          | Material             | Pixelation | Pixel pitch      | Resolution                         | SNR          |
|-----------------|----------------------|------------|------------------|------------------------------------|--------------|
| Medipix2        | 300 $\mu\text{m}$ Si | 256 x 256  | 55 $\mu\text{m}$ | <b>29 <math>\mu\text{m}</math></b> | 9.32         |
| Medipix2        | 1 mm CdTe            | 256 x 256  | 55 $\mu\text{m}$ | 45 $\mu\text{m}$                   | <b>11.96</b> |
| Gendex VisualiX | P scintillator       | 1368 x 912 | 22 $\mu\text{m}$ | 119 $\mu\text{m}$                  | 7.98         |

# Evaluation of detector properties



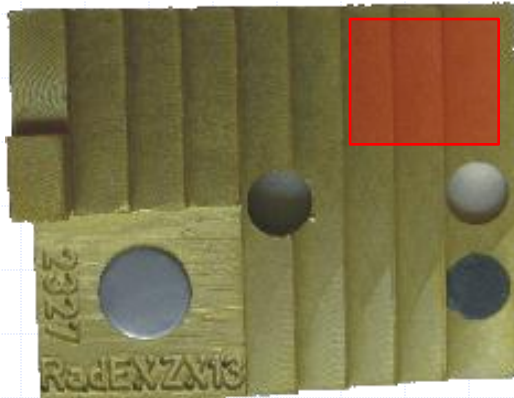
Calibration sample – Aluminum made steps with thickness from 1.8 mm to 15 mm

Average image of the sample

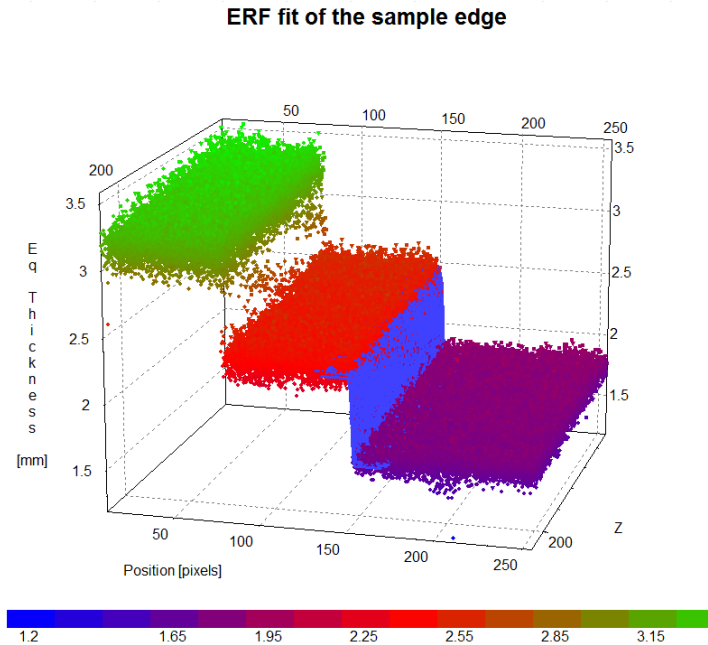


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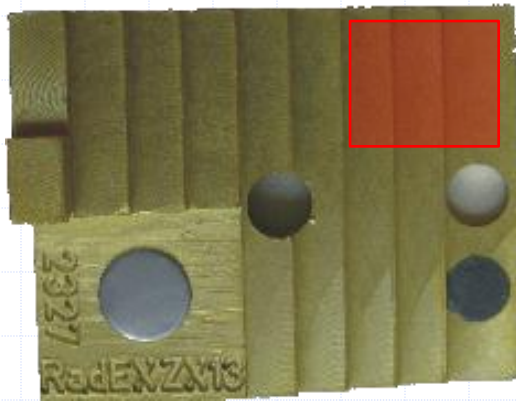


Calibration sample – Aluminum made steps with thickness from 1.8 mm to 15 mm

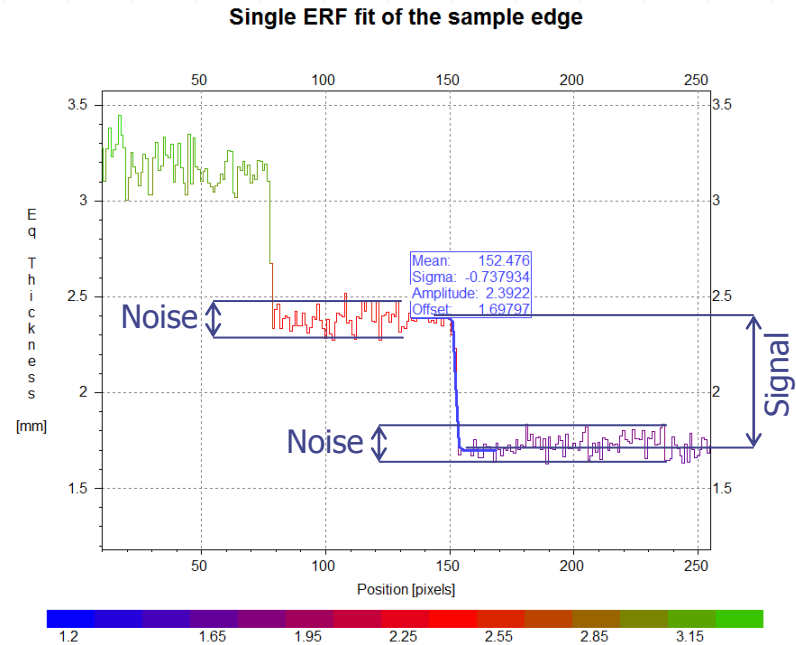


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