X-ray CT

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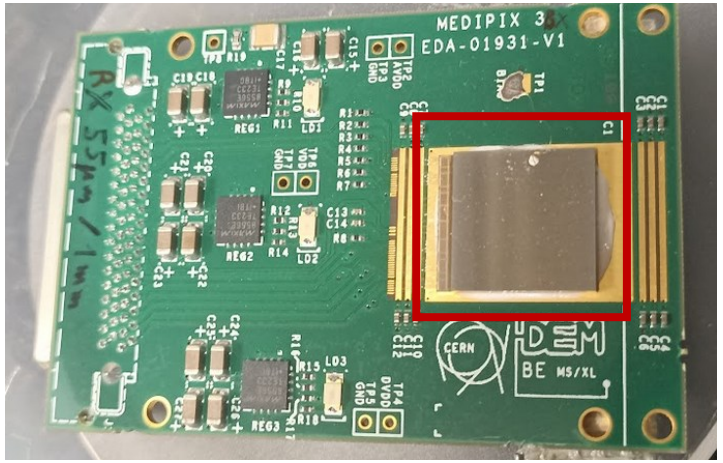
Esquema:

1. Metodologia Experimental.
   a. ¿Que se necesita?
   b. ¿Como se hace?
   c. ¿Que se obtiene?
2. Aplicaciones.
3. Aplicaciones en UNIANDES.

Metodologia Experimental.

¿Que se necesita?: Detector de Rayos X.



Medipix3

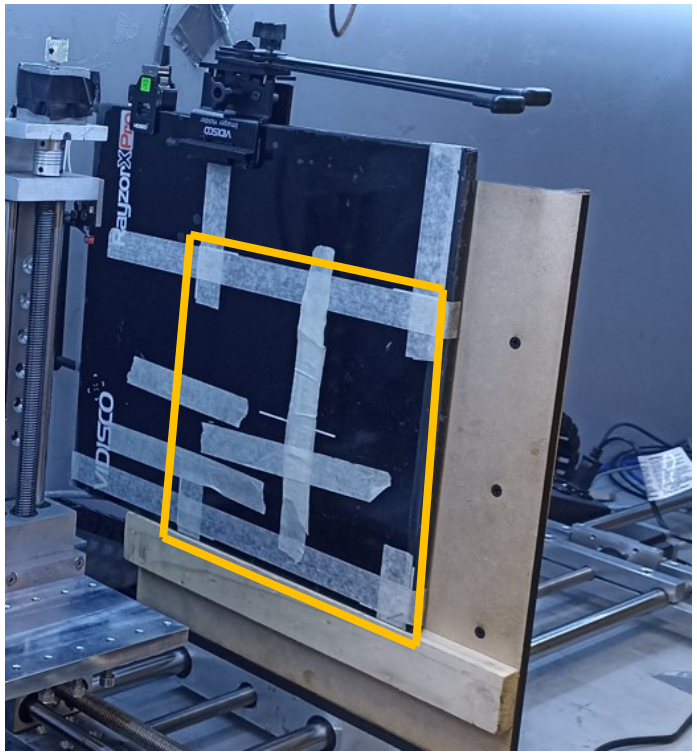
1,4 cm X 1,4 cm

55 um

Flat Panel para **NDT**

22,2 cm X 22,2 cm

143 um



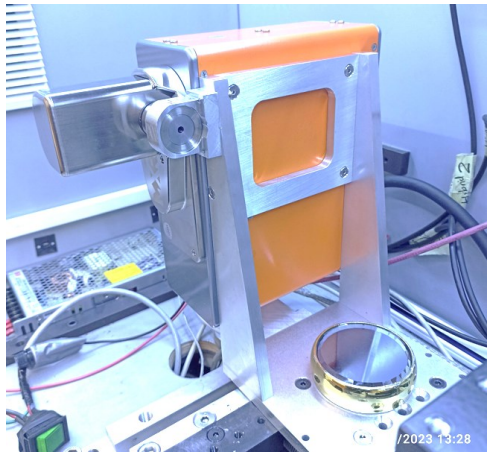
Flat Panel

28 cm X 24 cm

50 um

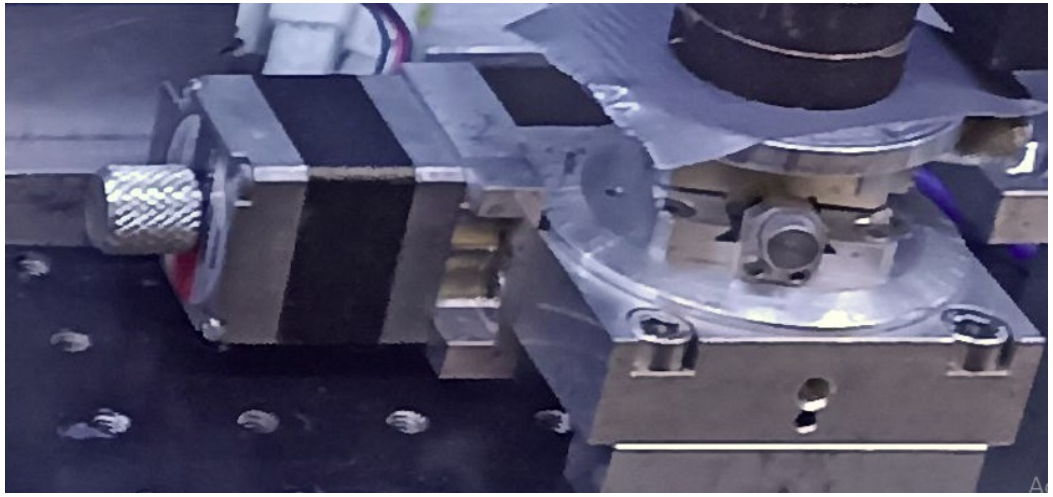
Metodologia Experimental.

¿Que se necesita?: Fuente de Rayos X.



Metodologia Experimental.

¿Que se necesita?: Plataforma Rotacional Motorizada.



Metodologia Experimental.

¿Que se necesita?: Blindaje

Metodologia Experimental.

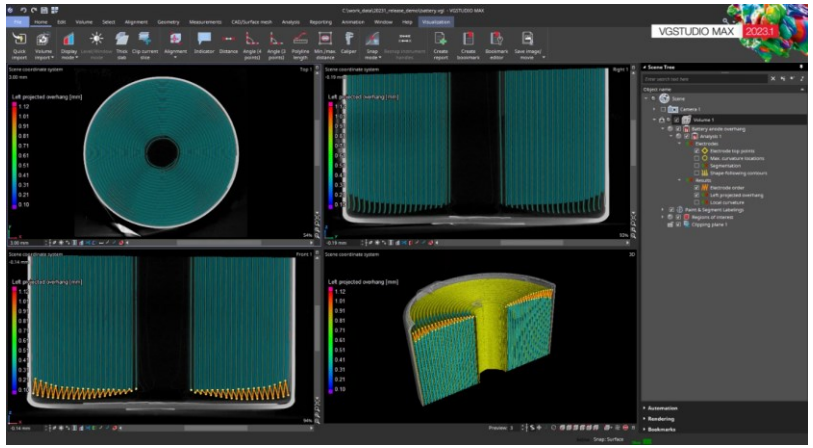
¿Que se necesita?: Hardware

Metodologia Experimental.

¿Que se necesita?: Software

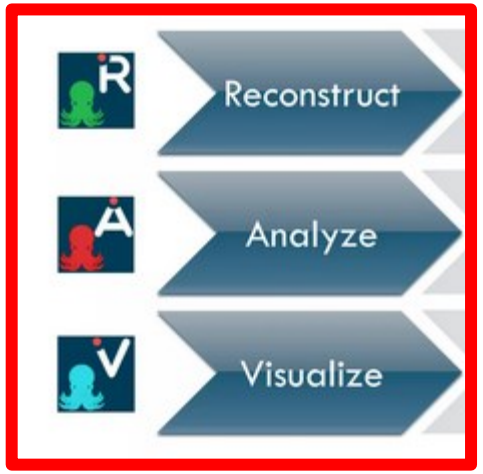
dragonfly

VG STUDIO MAX



astra-toolbox/**astra-toolbox**

ASTRA Tomography Toolbox



Metodologia Experimental.

¿Que se necesita?

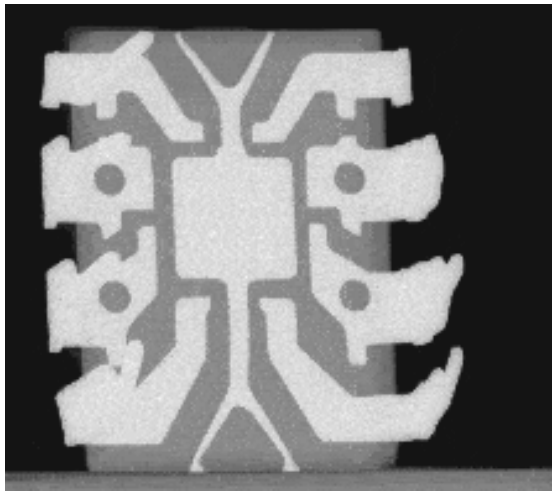
Detector RX	~ COP $ 220 M con impuestos de importacion
Fuente RX	~ COP $ 360 M con impuestos de importacion
Plataforma Rotacional Motorizada	~ COP $ 17 M con impuestos de importacion
Blindaje	~ COP $ 10 M
Hardware	< COP $ 17 M
Software	~ COP $ 87 M*
Tiempo de Operación	
Tiempo de Procesamiento	

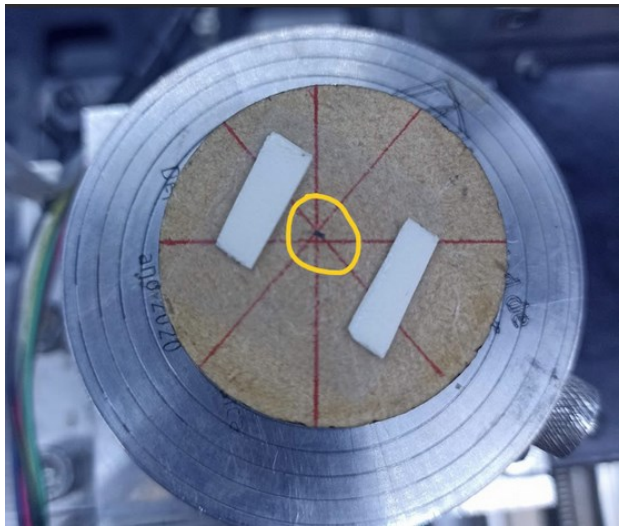
Metodologia Experimental.

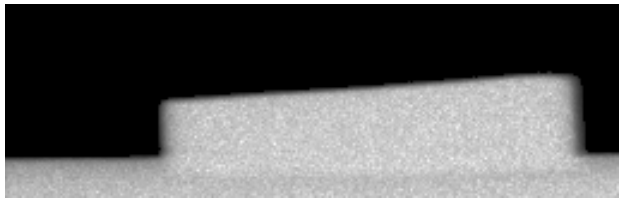
¿Que se necesita?

Metodologia Experimental.

¿Como se hace?: Tomar Imágenes RX a distintos angulos.







*¿Qué se puede hacer mejor?:

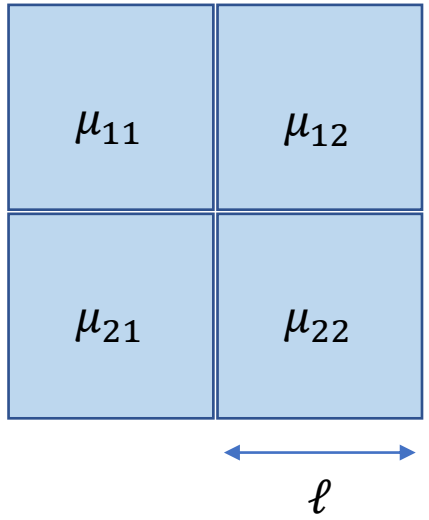
Alineacion
Voltajes

Metodologia Experimental.

¿Como se hace?: Tomar Imágenes RX a distintos angulos.

¿Cuantas imagenes?

"Muestra"



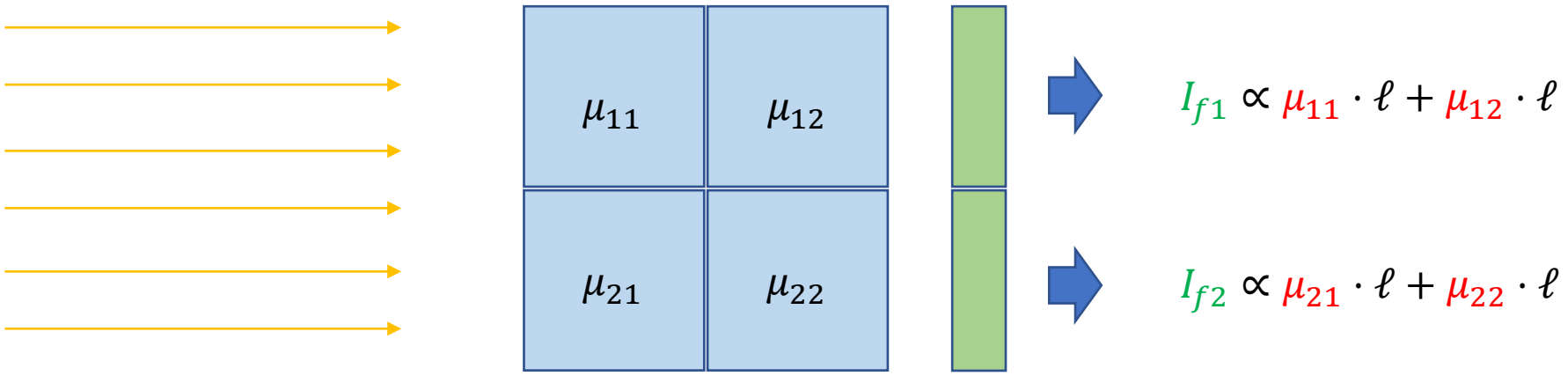
Vista Superior

Metodologia Experimental.

¿Como se hace?: Tomar Imágenes RX a distintos angulos.

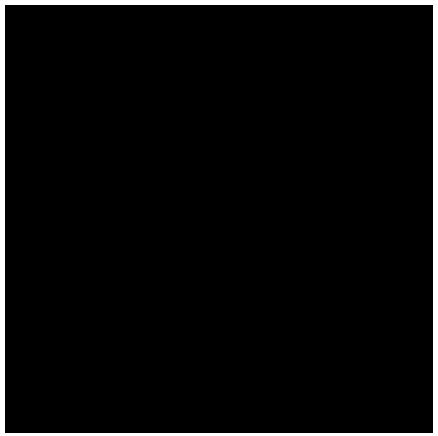
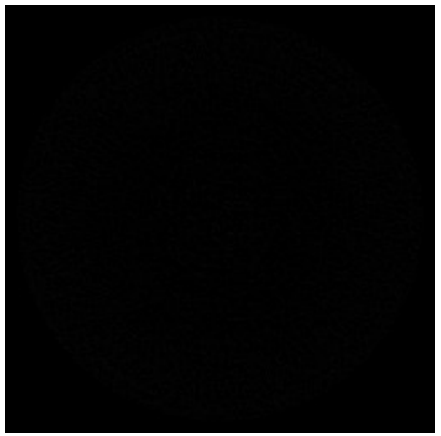
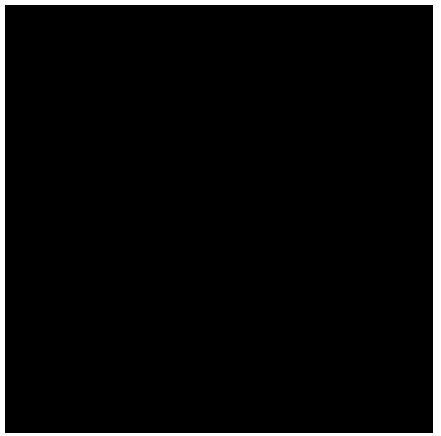
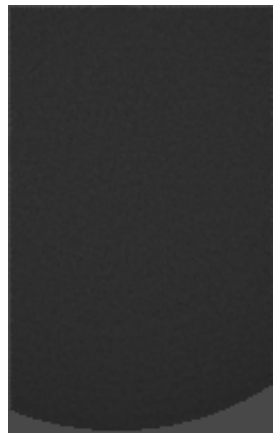
¿Cuantas imagenes?

Tomemos una imagen



Metodologia Experimental.

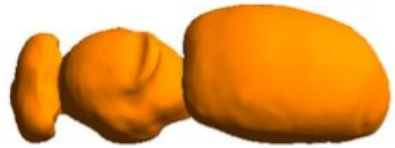
¿Que se obtiene?

Aplicaciones: Biologia

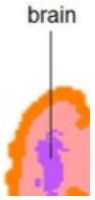
Mantis Model

Western honeybee model



3D surface for creating inner tissue

brain model



Jeladze, V., Thielens, A., Nozadze, T., Korkotadze, G., Partsvania, B., & Zaridze, R. (2023, September). Estimation of the specific absorption rate for a honey bee exposed to radiofrequency electromagnetic fields from 2.5 to 100 GHz. In *2023 IEEE XXVIII international seminar/workshop on direct and inverse problems of electromagnetic and acoustic wave theory (DIPED)* (Vol. 1, pp. 180-185). IEEE.

Aplicaciones: Biologia

VOIGHT, J. R., SMITH, S. M., BUGLASS, S., & ZIEGLER, A. (2026). A new species of Microeledone from Galápagos Islands and an amended diagnosis of the Megaleledonidae (Octopoda: Incirrata). *Zootaxa*, *5814*(4), 533-549.

Aplicaciones: Ciencia Forense

Fig. 4. Right lateral views of the 3D volume-rendered micro-CT scan (top) and X-ray (bottom) of JRM-02.

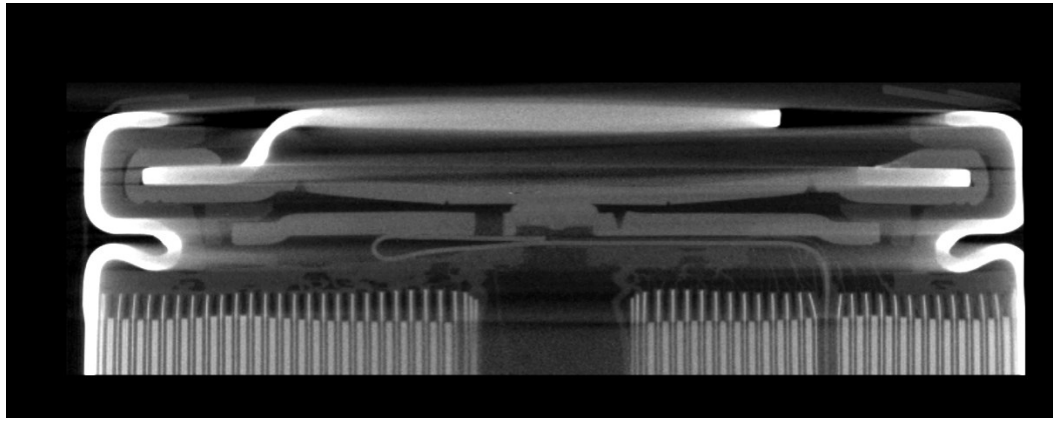
Goia, S., Cooper, G., Norman, D. G., Primeau, C., Hall, M., Hawley, J., & Williams, M. A. (2024). The use of micro-CT in the investigation of a case involving 3D printed firearms. *Forensic Science International*, *363*, 112157.

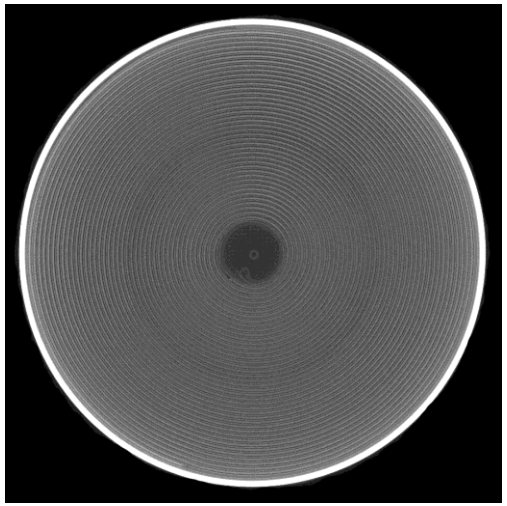
3D printed parts?

Digital twin.

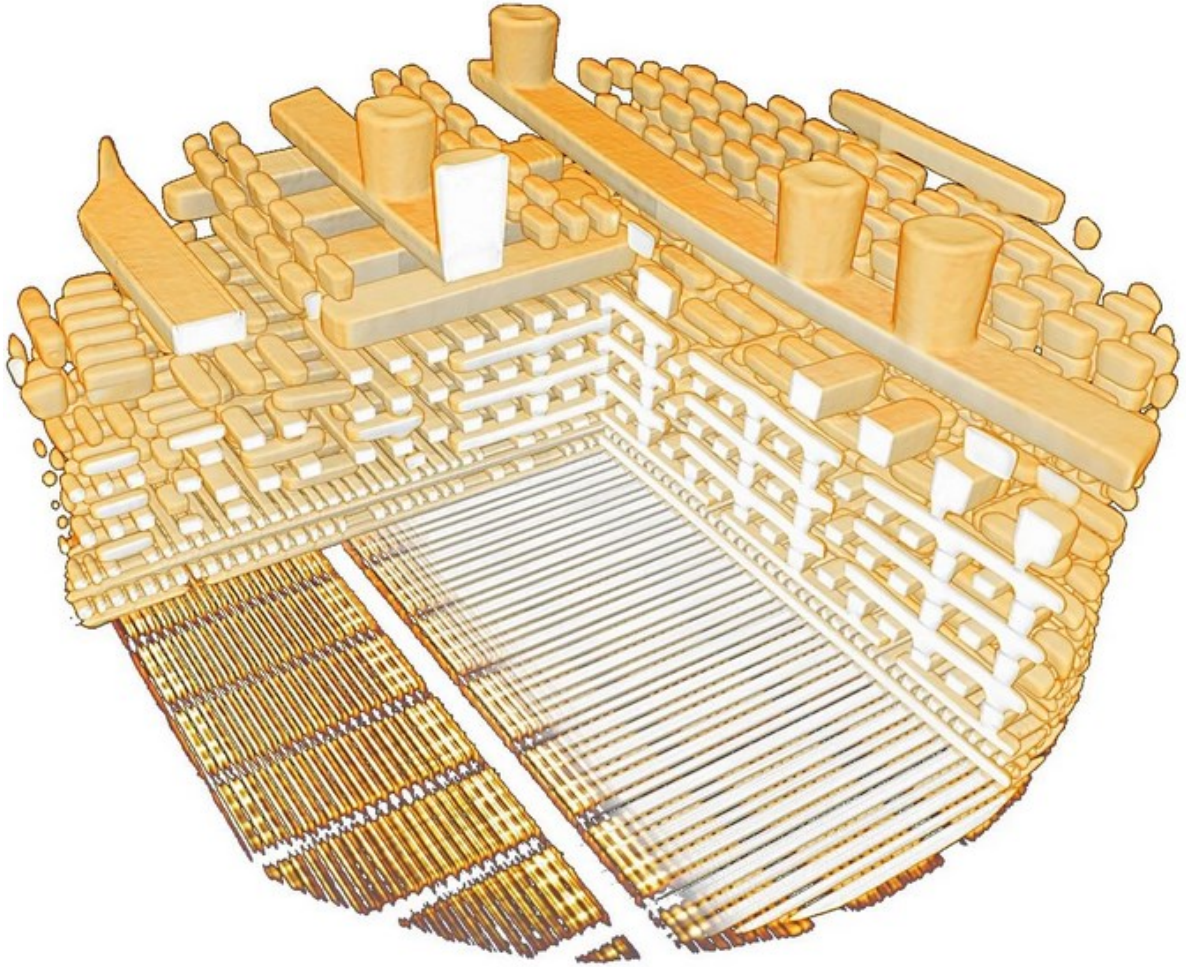
Aplicaciones: NDT

Baterias.

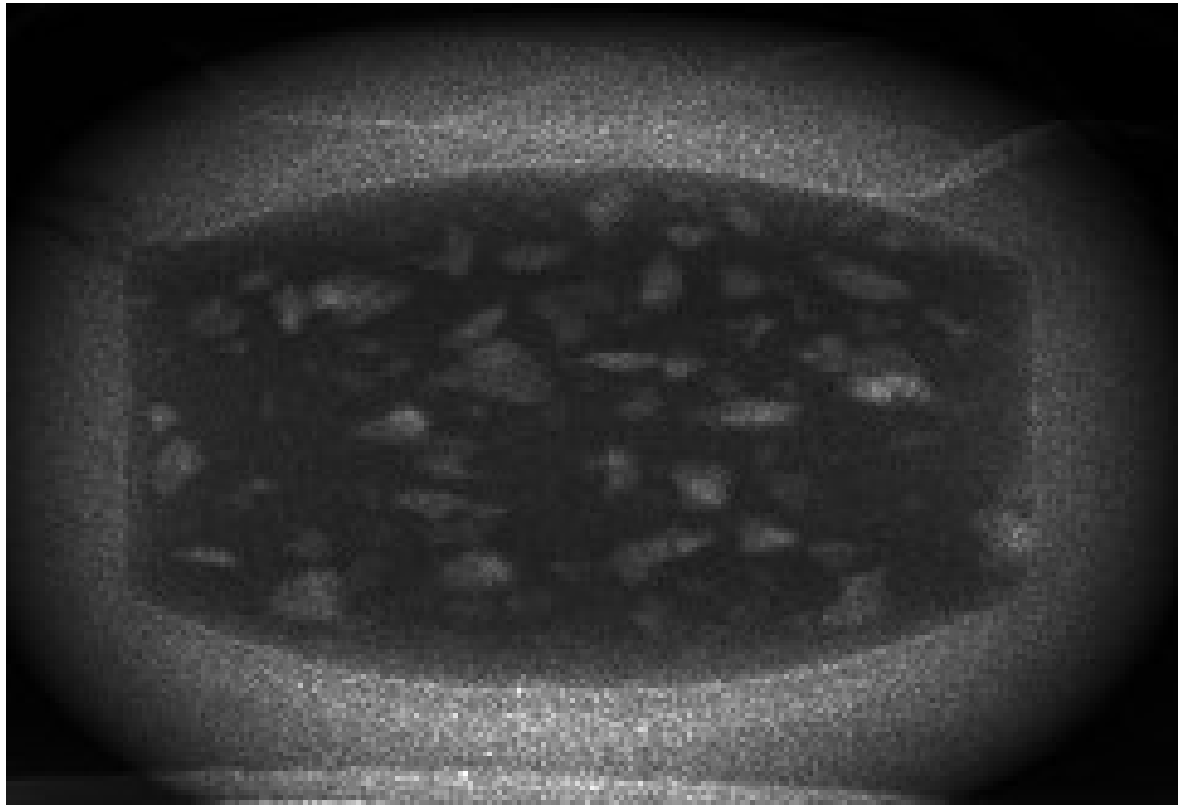




Procesadores para Computadores



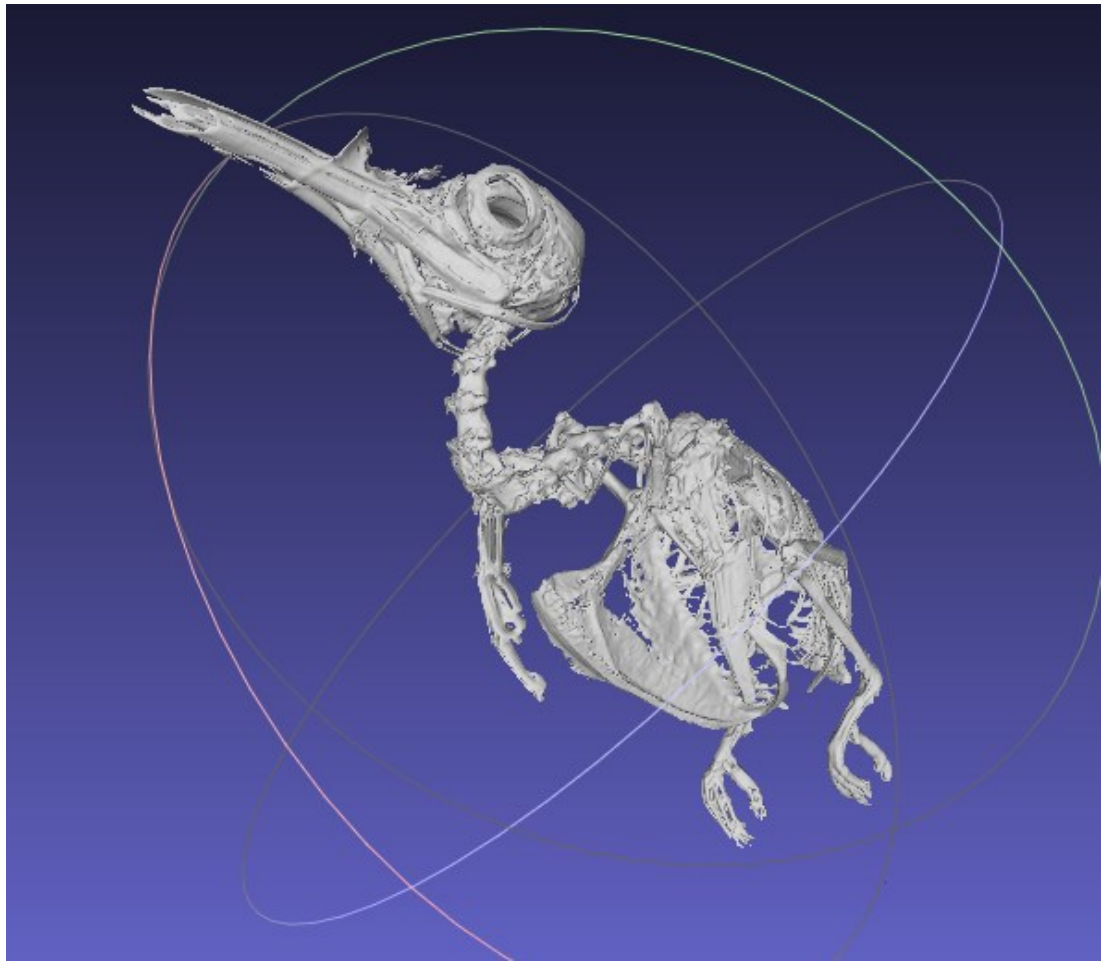
Aplicaciones UNIANDES



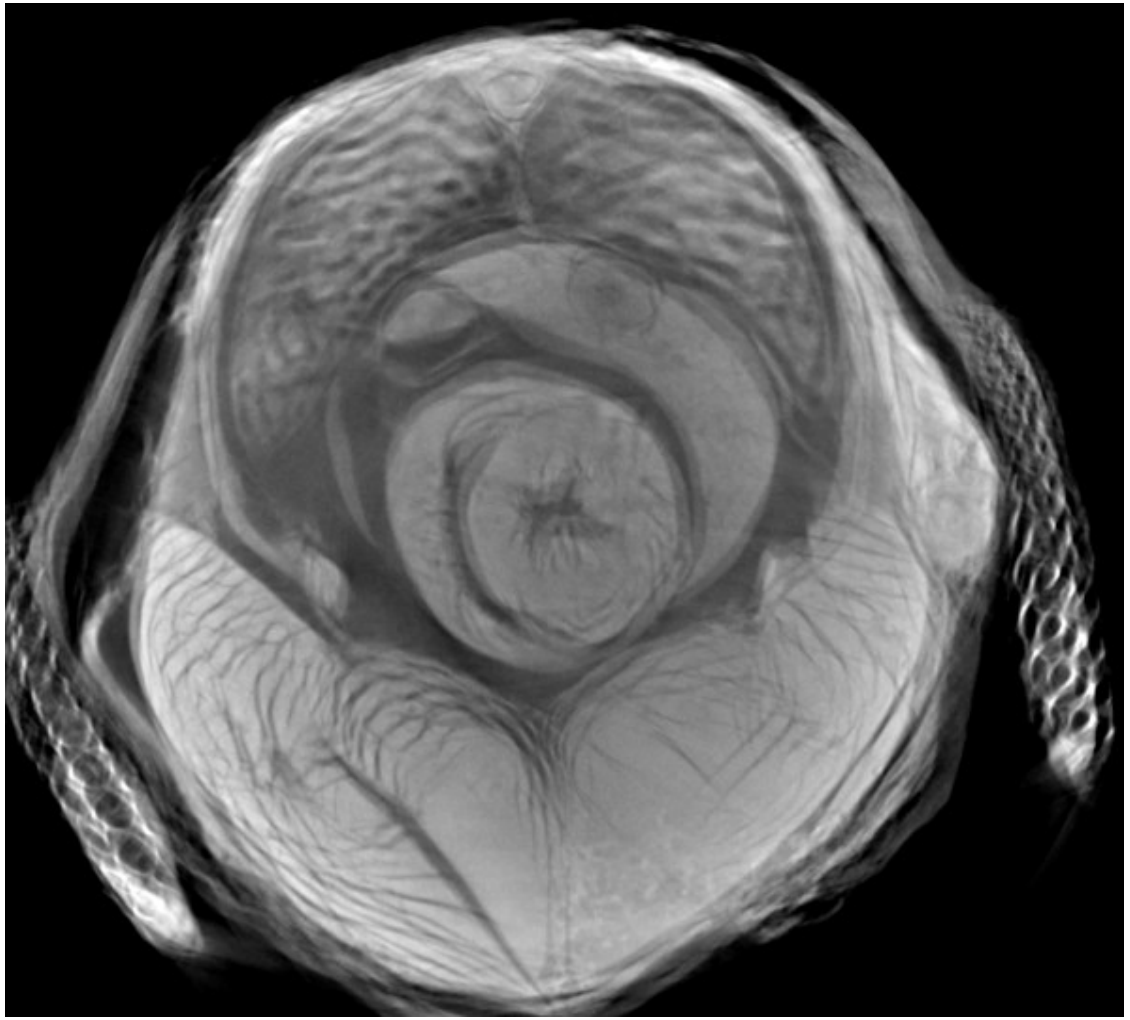
Aplicaciones UNIANDES

<u>Problemas:</u>

Alineacion



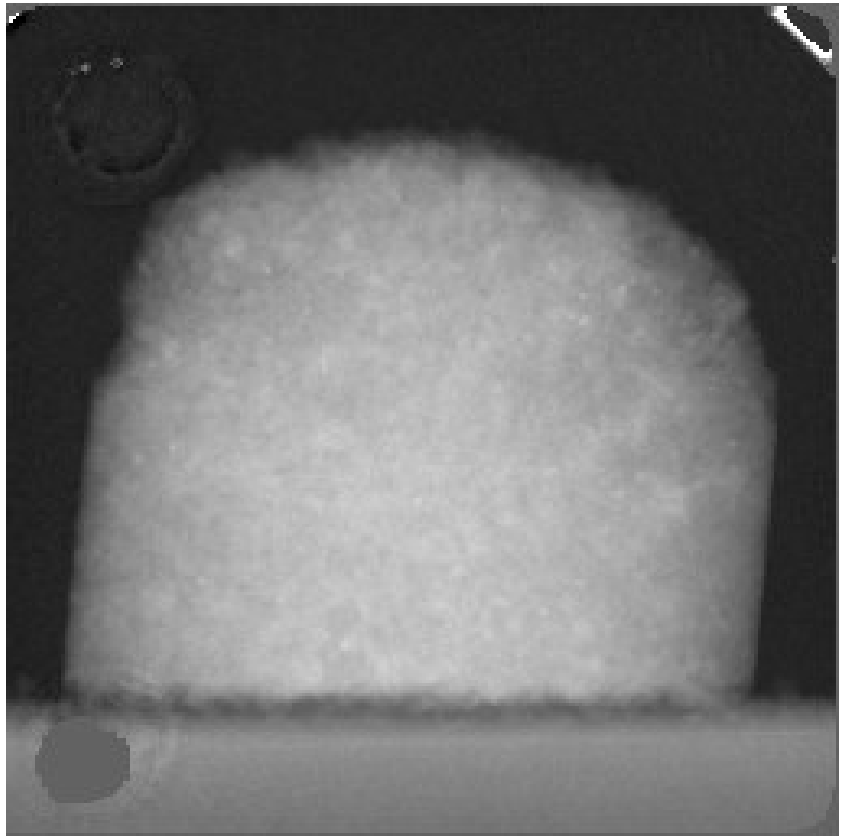
Aplicaciones UNIANDES

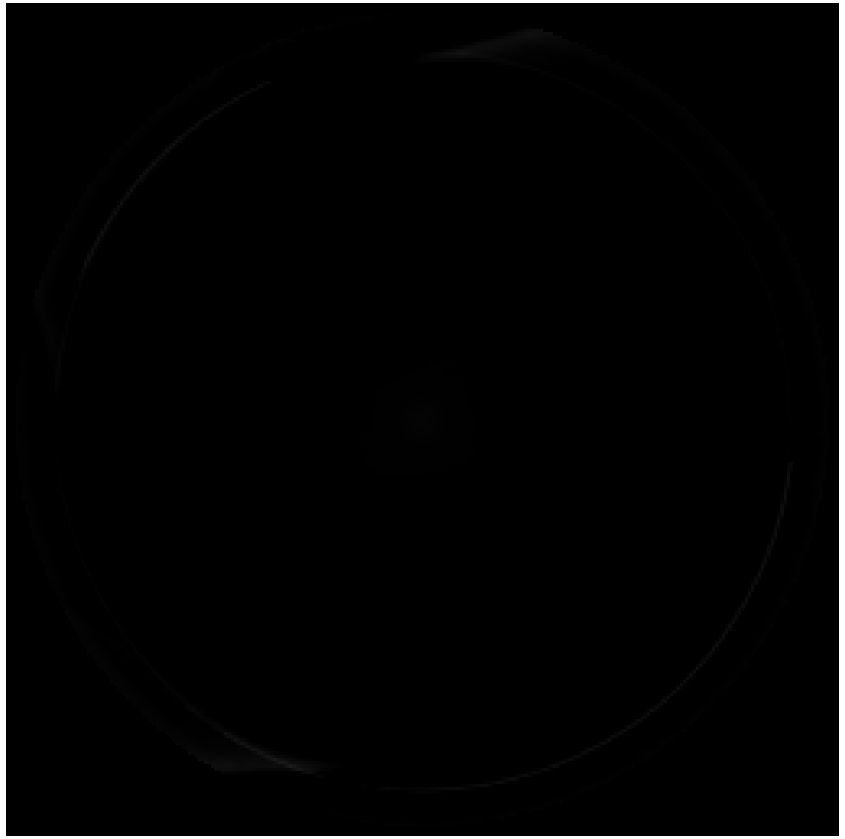


Problemas:

~13 horas

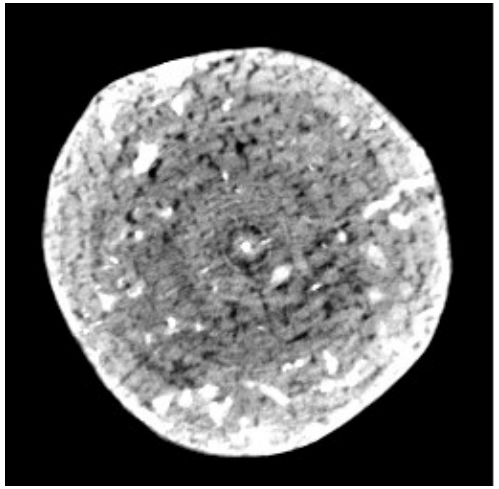
Aplicaciones UNIANDES





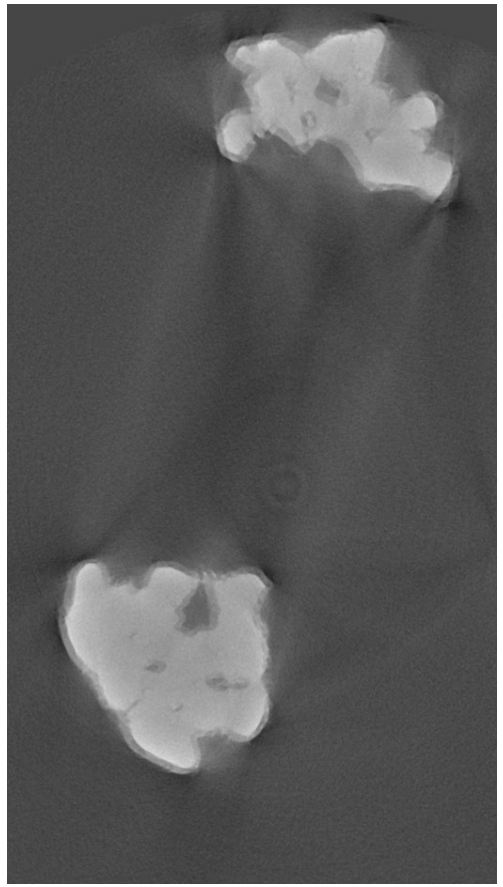
<u>Problemas:</u>

Beam Hardening

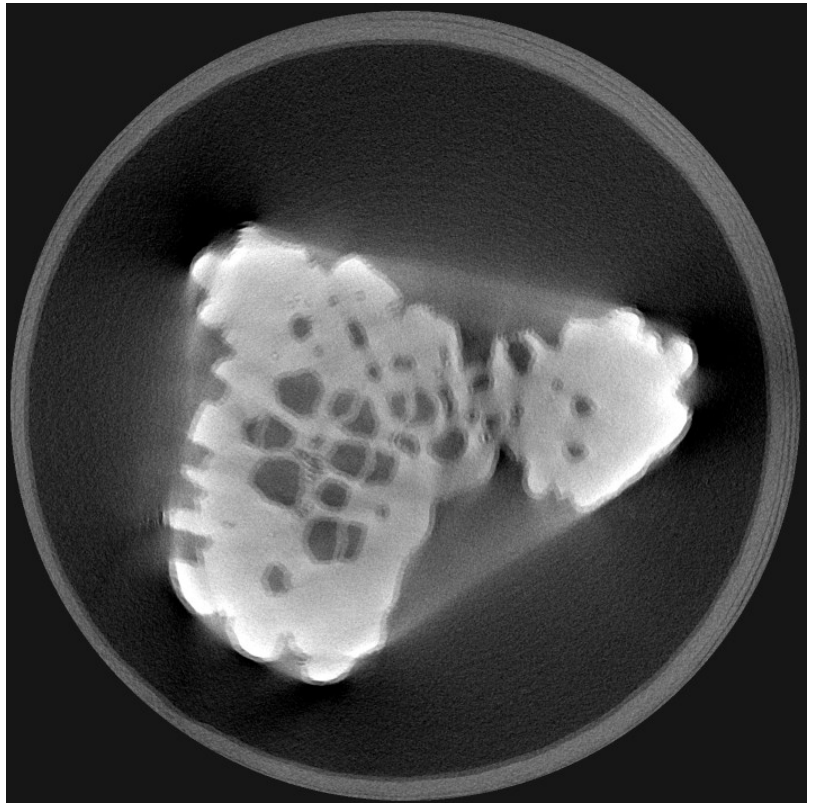


Aplicaciones UNIANDES

Desalineacion



Artefactos



Gracias

Referencias.

https://www.lumafield.com/products/neptune-industrial-x-ray-ct-scanner?_gl=1*fhgem*_up*MQ..*_ga*MTI0MDc2MjQyNC4xNzgxMjM5MjU4*_ga_GXRE1P1WS6*czE3ODEyMzkyNTUkbzEkZzEkdDE3ODEyMzkzMDMkajEyJGwwJGg1NTQ2OTc2NTE.

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