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Lampiran






Lampiran 1: Alat dan Bahan

No.	Alat dan Bahan	Fungsi
1	Gelas beaker 	Sebagai wadah untuk menampung larutan dan tempat mencampur bahan.
2	Gelas ukur 	Digunakan untuk mengukur volume cairan
3	Spatula 	Digunakan untuk mengaduk adonan
4	Neraca Digital 	Digunakan untuk menimbang bahan
5	Cetakan (mold) 	Untuk mencetak <i>phantom</i>



6	Kulkas 	Untuk membekukan <i>phantom</i>
7	Magnetic bar 	Untuk mengaduk larutan
8	Magnetic stirrer 	Untuk mencampur larutan hingga homogen
9	CT-Scan merk Siemens Healthineers 	Untuk mendapatkan citra <i>phantom</i>
10	Mesh (ayakan 100) 	Untuk mendapatkan partikel yang lebih halus



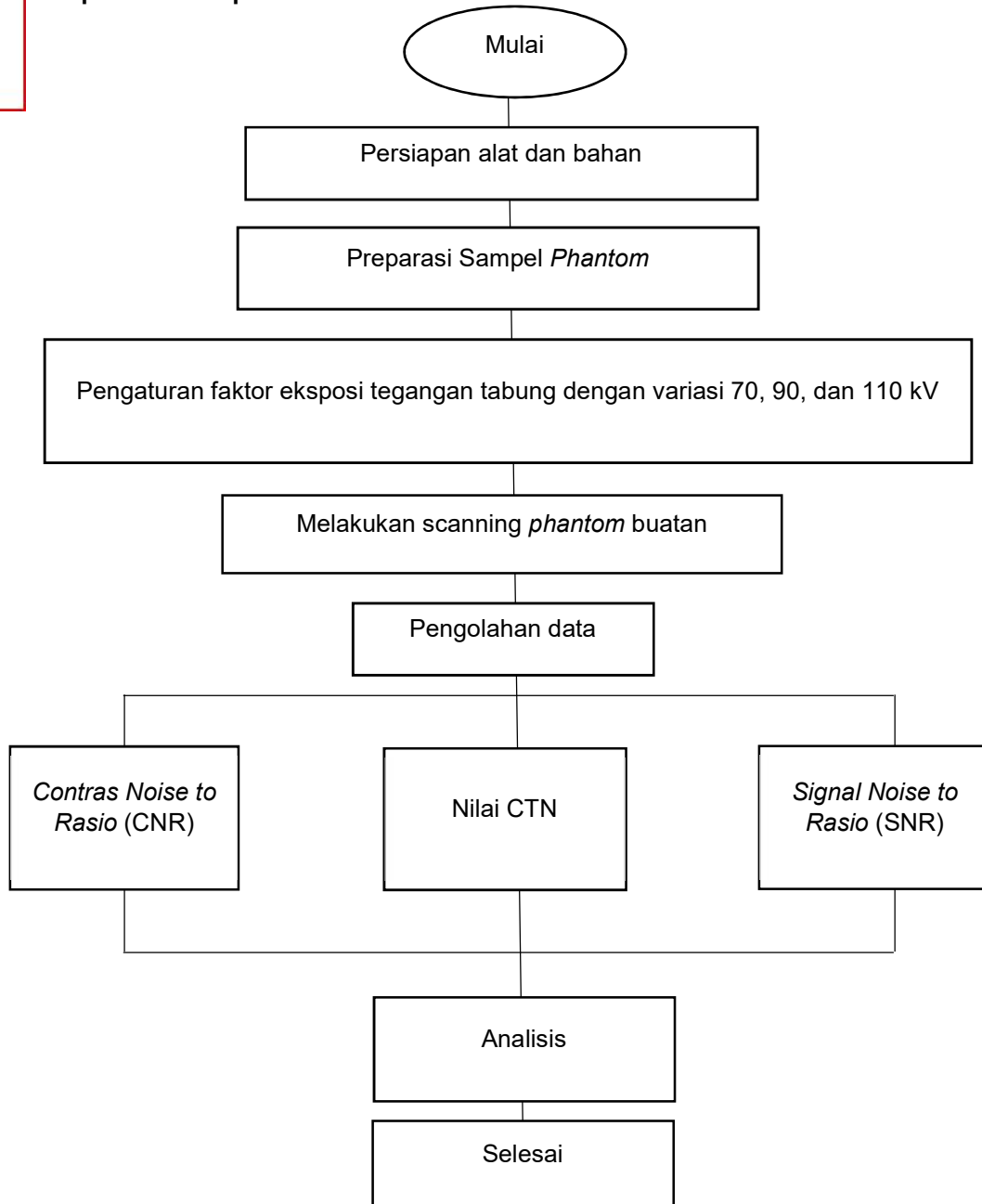
11	Software Radiant DICOM 	Untuk mendapatkan nilai ROI dan nilai CTN pada <i>phantom</i> dalam bentuk DICOM
12	Bakau Minyak (<i>Rizhopora spp</i>) 	Sabagai bahan utama pembuatan phantom
13	Polyvinyl alcohol (PVA) 	Sebagai perekat dalam pembuatan phantom
14	Gelatin 	Untuk memadatkan phantom
15	Aquades 	Sebagai pelarut sampel



16	Akrilik 	Sebagai Wadah phantom
17	<i>Phantom</i> 	untuk jaminan kualitas (QA) dan kalibrasi pemindai CT itu sendiri

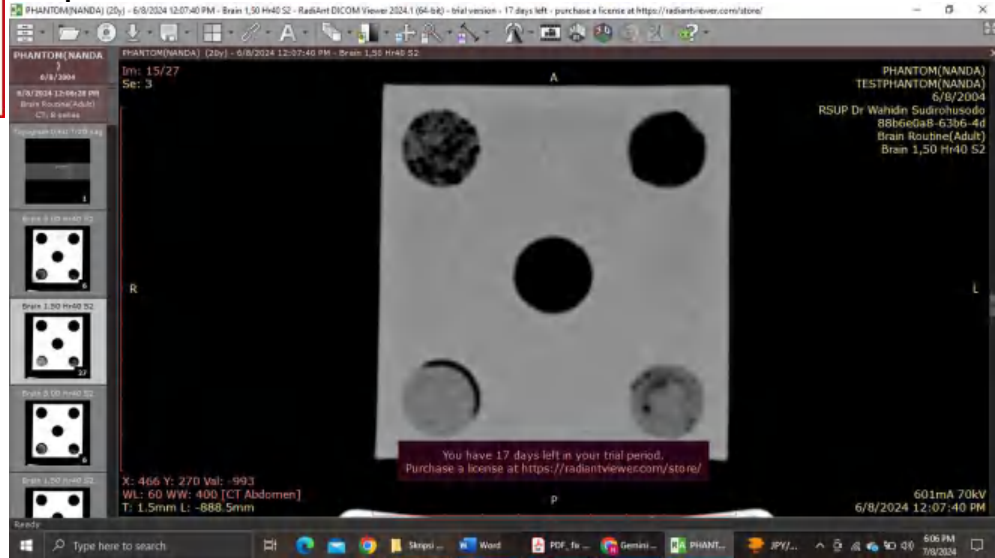


Lampiran 2. Alur penelitian

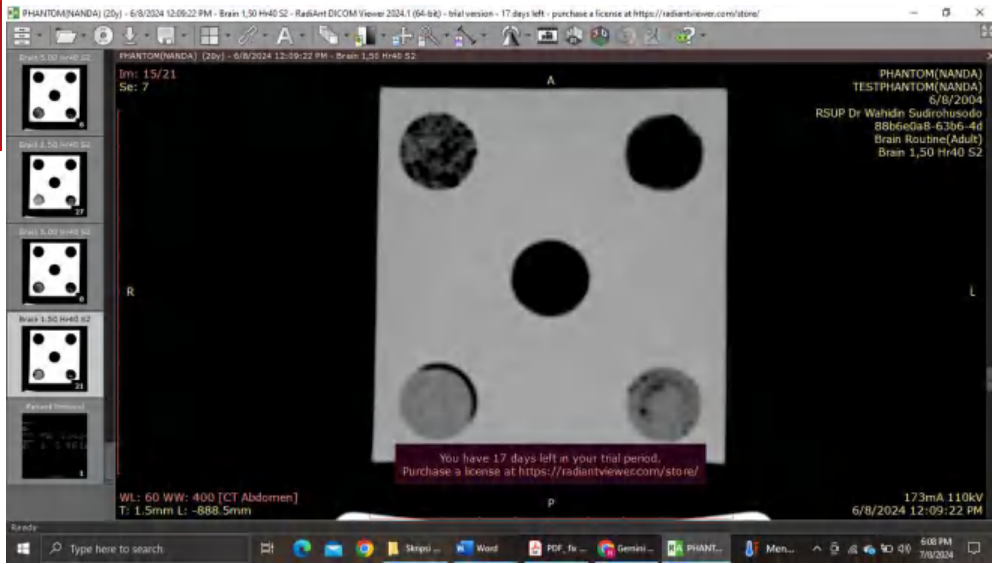




Lampiran 3 : Profil Citra

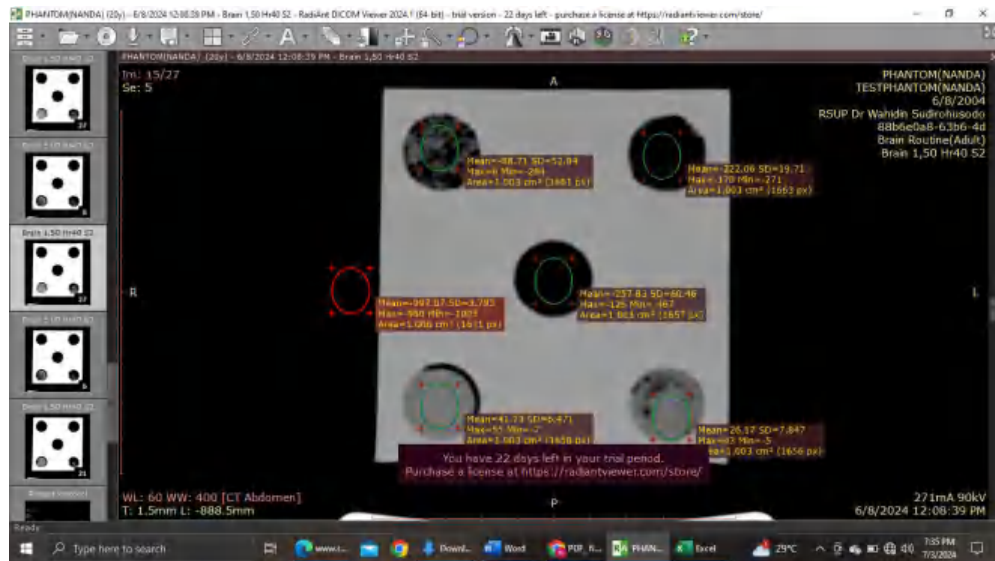
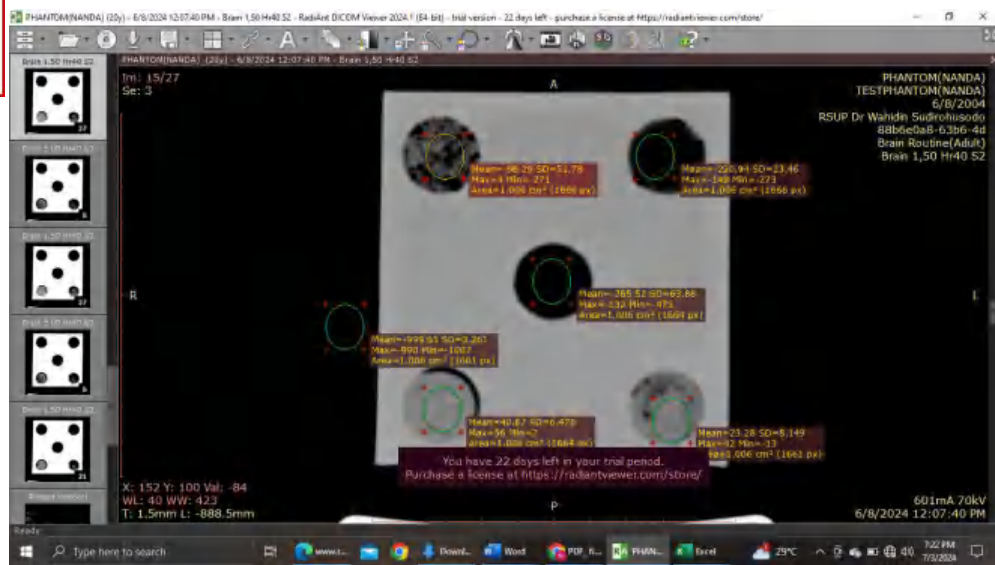


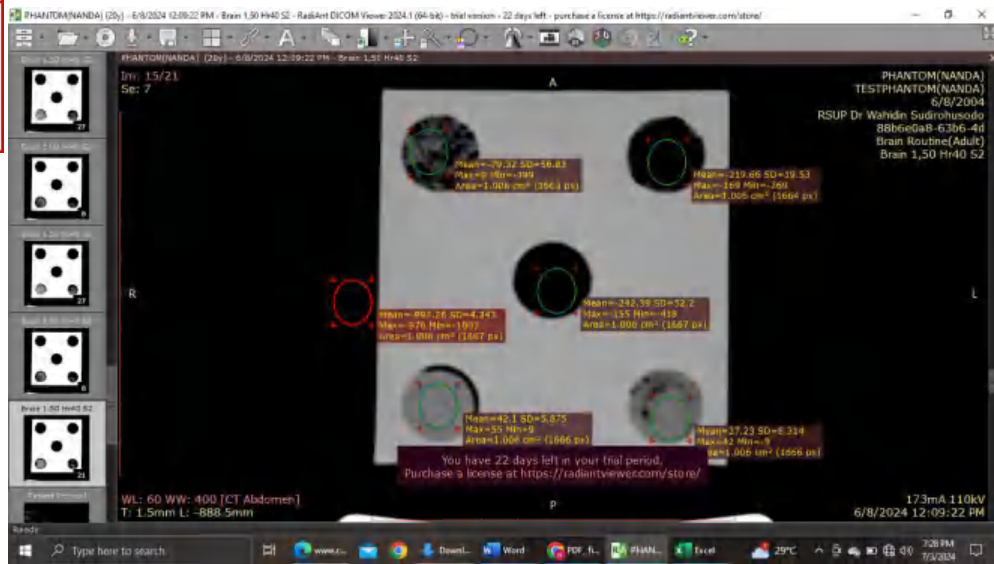
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Lampiran 4 : Penentuan Nilai CTN pada software Radiant DICOM







Lampiran 5 : Hasil perhitungan CNR dan SNR

OBJEK KE-	TEGANGAN	ROI1		ROI2		CNR	SNR	
		MEAN	SD	MEAN	SD			
1	I	70 kV	-265.52	63.88	-999.65	3.261	41.02707145	16.23147234
2	II		-220.94	23.46	-999.65	3.261	85.60707145	464.950912
3	III		-98.29	51.78	-999.65	3.261	208.2570715	24.56923766
4	IV		23.27	8.091	-999.65	3.261	329.8170715	165.8322141
5	V		40.87	6.478	-999.65	3.261	347.4170715	202.8982574
6	I	90 kV	-257.83	60.46	-997.07	3.793	5.041078302	17.25755832
7	II		-222.06	19.71	-997.07	3.793	40.8110783	54.75101374
8	III		-88.71	52.84	-997.07	3.793	174.1610783	24.24901797
9	VI		26.17	7.847	-997.07	3.793	289.0410783	165.5707292
10	V		41.73	6.471	-997.07	3.793	304.6010783	195.8593964
11	I	110 kV	-242.39	52.2	-997.26	4.343	12.7653166	20.38068243
12	II		-219.66	19.53	-997.26	4.343	9.964683399	54.96521377
13	III		-79.32	56.83	-997.26	4.343	150.3046834	22.7765086
14	IV		27.23	8.314	-997.26	4.343	256.8546834	154.4328601
15	V		42.1	5.875	-997.26	4.343	271.7246834	201.1515591



Lampiran 6: Pengolahan Data

1. Nilai CNR

$$CNR = \frac{\text{mean ROI}_1 - \text{mean ROI}_2}{SD \text{ ROI}_2}$$

a. Tegangan 70 kV

- Sampel 1

$$CNR = \frac{(-265,52) - (-999,65)}{3,261} \\ = 41,0270715$$

- Sampel 2

$$CNR = \frac{(-220,94) - (-999,65)}{3,261} \\ = 85,6070715$$

- Sampel 3

$$CNR = \frac{(-98,29) - (-999,65)}{3,261} \\ = 208,257071$$

- Sampel 4

$$CNR = \frac{(23,27) - (-999,65)}{3,261} \\ = 329,817071$$

- Sampel 5

$$CNR = \frac{(40,87) - (-999,65)}{3,261} \\ = 347,417071$$

b. Tegangan 90 kV

- Sampel 1

$$CNR = \frac{(-257,83) - (-997,07)}{3,793} \\ = 5,0410783$$

- Sampel 2

$$CNR = \frac{(-222,06) - (-997,07)}{3,793} \\ = 40,8110783$$

- Sampel 3



$$CNR = \frac{(-88,71) - (-997,07)}{3,793}$$

$$= 174,161078$$

- Sampel 4

$$CNR = \frac{(26,17) - (-997,07)}{3,793}$$

$$= 289,041078$$

- Sampel 5

$$CNR = \frac{(41,73) - (-997,07)}{3,793}$$

$$= 304,601078$$

c. Tegangan 110 kV

- Sampel 1

$$CNR = \frac{(-242,39) - (-997,26)}{4,343}$$

$$= 12,765317$$

- Sampel 2

$$CNR = \frac{(-219,66) - (-997,26)}{4,343}$$

$$= 9,9646834$$

- Sampel 3

$$CNR = \frac{(-79,32) - (-997,26)}{4,343}$$

$$= 150,304683$$

- Sampel 4

$$CNR = \frac{(27,23) - (-997,26)}{4,343}$$

$$= 256,854683$$

- Sampel 5

$$CNR = \frac{(42,1) - (-997,26)}{4,343}$$

$$= 271,724683$$



2. Nilai SNR

$$SNR = \frac{(mean ROI_1 - mean ROI_2)}{\sqrt{\frac{(SD ROI_1)^2 + (SD ROI_2)^2}{2}}}$$

a. Tegangan 70 kV

- Sampel 1

$$SNR = \frac{(-265,52) - (-999,65)}{\sqrt{\frac{(63,88)^2 + (3,261)^2}{2}}} = 16,2314723353$$

- Sampel 2

$$SNR = \frac{(-220,94) - (-999,65)}{\sqrt{\frac{(23,46)^2 + (3,261)^2}{2}}} = 46,4950912744$$

- Sampel 3

$$SNR = \frac{(-98,29) - (-999,65)}{\sqrt{\frac{(51,78)^2 + (3,261)^2}{2}}} = 24,5692376644$$

- Sampel 4

$$SNR = \frac{(23,27) - (-999,65)}{\sqrt{\frac{(8,091)^2 + (3,261)^2}{2}}} = 165,83221411$$

- Sampel 5

$$SNR = \frac{(40,87) - (-999,65)}{\sqrt{\frac{(6,478)^2 + (3,261)^2}{2}}} = 202,898257378$$

b. Tegangan 90 kV

- Sampel 1

$$SNR = \frac{(-257,83) - (-997,07)}{\sqrt{\frac{(60,46)^2 + (3,793)^2}{2}}}$$



- Sampel 2

$$=17,2575583235$$

$$SNR = \frac{(-222,06) - (-997,07)}{\sqrt{\frac{(19,71)^2 + (3,793)^2}{2}}}$$

$$=54,7510137371$$

- Sampel 3

$$SNR = \frac{(-88,71) - (-997,07)}{\sqrt{\frac{(52,84)^2 + (3,793)^2}{2}}}$$

$$= 24,2490179715$$

- Sampel 4

$$SNR = \frac{(26,17) - (-997,07)}{\sqrt{\frac{(7,847)^2 + (3,793)^2}{2}}}$$

$$=165,570729244$$

- Sampel 5

$$SNR = \frac{(41,73) - (-997,07)}{\sqrt{\frac{(6,471)^2 + (3,793)^2}{2}}}$$

$$=195,859396368$$

- c. Tegangan 110 kV

- Sampel 1

$$SNR = \frac{(-242,39) - (-997,26)}{\sqrt{\frac{(52,2)^2 + (4,343)^2}{2}}}$$

$$=20,3806824206$$

- Sampel 2

$$SNR = \frac{(-219,66) - (-997,26)}{\sqrt{\frac{(19,53)^2 + (4,343)^2}{2}}}$$

$$=54,9652137745$$

- Sampel 3

$$SNR = \frac{(-79,32) - (-997,26)}{\sqrt{\frac{(56,83)^2 + (4,343)^2}{2}}}$$



- Sampel 4

$$= 22,7765086047$$

$$SNR = \frac{(27,23) - (-997,07)}{\sqrt{\frac{(8,314)^2 + (3,793)^2}{2}}}$$

$$= 154,432860117$$

- Sampel 5

$$SNR = \frac{(42,1) - (-997,07)}{\sqrt{\frac{(5,875)^2 + (3,793)^2}{2}}}$$

$$= 201,151559127$$