

**DAFTAR PUSTAKA**

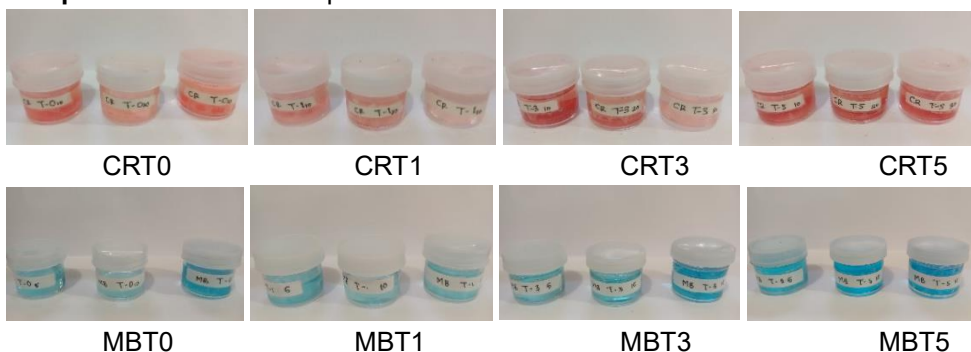
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## LAMPIRAN

### Lampiran 1. Dokumentasi penelitian



Persiapan alat dan bahan sintesis komposit  $\text{TiO}_2/\text{Ce}$



Pengadukan sampel



Proses penyaringan



Proses sentrifugasi



Sampel dioven  
( $T=100^\circ\text{C}$ ,  $t=2$  jam)



Sampel difurnace  
( $T=580^\circ\text{C}$ ,  $t=2$  jam)



Sampel digerus



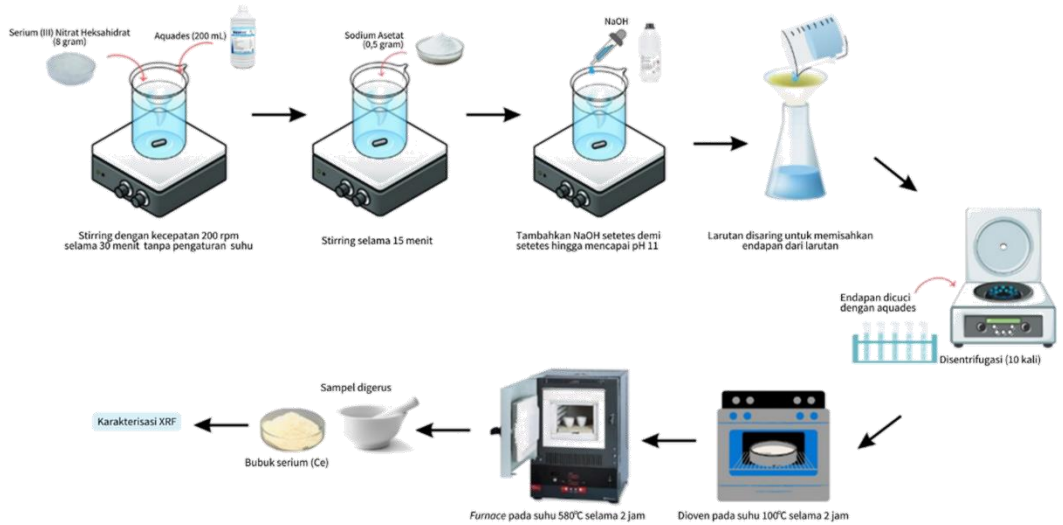
Bubuk sampel



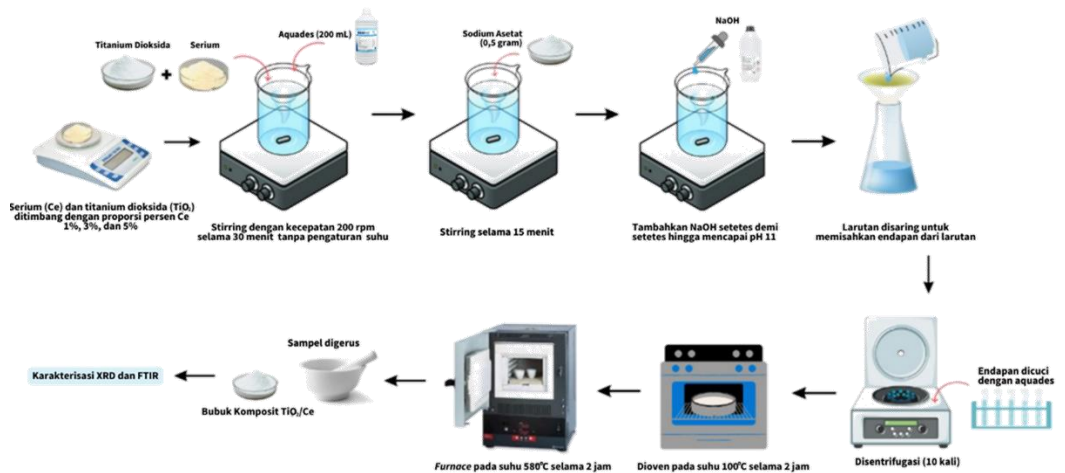
Proses pengujian fotokatalis

## Lampiran 2.

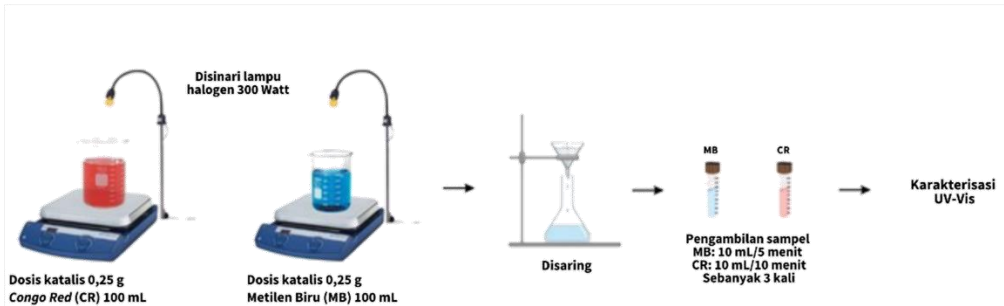
### Lampiran 2.1 Sintesis Serium (III) Nitrat Heksahidrat ( $Ce(NO_3)_3 \cdot 6H_2O$ )



### Lampiran 2.2 Sintesis Komposit $TiO_2/Ce$



### Lampiran 2.3 Mekanisme Fotokatalis



### Lampiran 3

#### Lampiran 3.1 Perhitungan Ukuran Kristal

$$D = \frac{k\lambda}{\beta \cos\theta}$$

Dimana, D adalah ukuran kristal, k adalah konstanta Scherrer (0,9),  $\lambda$  adalah Panjang gelombang untuk radiasi sinar x (untuk Cu adalah 0,154 nm),  $\beta$  adalah *The Full Width at Half Maximum* (FWHM), dan  $\theta$  adalah sudut difraksi.

	2 theta (deg)	2 theta (rad)	theta	k	Wavelength (nm)	FWHM (deg)	FWHM (rad)	cos theta	D	D Rata-rata
T-0	25,1757	0,4394	0,2197	0,9	0,154	0,2197	0,0038	0,9760	37,036	38,567
	29,2994	0,5114	0,2557	0,9	0,154	0,2047	0,0036	0,9675	40,098	
T-1	25,1073	0,4382	0,2191	0,9	0,154	0,2166	0,0038	0,9761	37,561	41,326
	29,2133	0,5099	0,2549	0,9	0,154	0,1820	0,0032	0,9677	45,090	
T-3	25,5970	0,4468	0,2234	0,9	0,154	0,3740	0,0065	0,9752	21,774	22,867
	29,7070	0,5185	0,2592	0,9	0,154	0,3429	0,0060	0,9666	23,960	
T-5	29,3174	0,5117	0,2558	0,9	0,154	0,5252	0,0092	0,9675	15,629	15,629

#### Lampiran 3.2 Perhitungan %Degradasi

$$\% \text{Degradasi} = \frac{C_0 - C_t}{C_0} \cdot 100\%$$

Material	Wavelength	Abs Polutan	Abs 10 min	Abs 20 min	Abs 30 min	deg 10 min	deg 20 min	deg 30 min
CRT0	480	1,306	0,117	0,031	0,208	91,041	97,626	84,074
CRT1	480	1,306	0,119	0,110	0,022	90,888	91,577	98,315
CRT3	480	1,306	0,649	0,327	0,021	50,306	74,962	98,392
CRT5	480	1,306	0,177	0,339	0,590	86,447	74,043	54,824
			Abs 5 min	Abs 10 min	Abs 15 min	deg 5 min	deg 10 min	deg 15 min
MBT0	660	2,022	0,341	0,278	0,878	83,136	86,251	56,578
MBT1	660	2,022	0,273	0,184	0,291	86,499	90,900	85,608
MBT3	660	2,022	0,312	0,365	0,849	84,570	81,949	58,012
MBT5	660	2,022	0,611	0,927	1,107	69,782	54,154	45,252

### Lampiran 3.3 Perhitungan Aktivitas Fotokatalis

$$\text{Aktivitas fotokatalis} = C_t/C_0$$

Dimana,  $C_0$  adalah nilai absorbansi *Congo Red* (30 mg/1000 ml) dan  $C_t$  adalah nilai absorbansi larutan yang sudah di uji fotokatalis.

Material	Wavelength	Abs Polutan	Abs 10 min	Abs 20 min	Abs 30 min	ct/c0 10 min	ct/c0 20 min	ct/c0 30 min
CRT0	480	1,306	0,117	0,031	0,208	0,090	0,024	0,159
CRT1	480	1,306	0,119	0,110	0,022	0,091	0,084	0,017
CRT3	480	1,306	0,649	0,327	0,021	0,497	0,250	0,016
CRT5	480	1,306	0,177	0,339	0,590	0,136	0,260	0,452
			Abs 5 min	Abs 10 min	Abs 15 min	ct/c0 5 min	ct/c0 10 min	ct/c0 15 min
MBT0	660	2,022	0,341	0,278	0,878	0,169	0,137	0,434
MBT1	660	2,022	0,273	0,184	0,291	0,135	0,091	0,144
MBT3	660	2,022	0,312	0,365	0,849	0,154	0,181	0,420
MBT5	660	2,022	0,611	0,927	1,107	0,302	0,458	0,547

### Lampiran 3.4 Perhitungan Laju Kinetik Fotodegradasi

$$\ln \frac{C_0}{C_t} = k_r \cdot t$$

Dimana,  $C_0$  adalah nilai absorbansi *Congo Red* (30 mg/1000 ml),  $C_t$  adalah nilai absorbansi larutan yang sudah di uji fotokatalis,  $k_r$  adalah laju fotodegradasi, dan  $t$  adalah waktu proses penyinaran

Material	Wavelength	Abs Polutan	Abs 10 min	Abs 20 min	Abs 30 min	In c0/ct 10 min	In c0/ct 20 min	In c0/ct 30 min
CRT0	480	1,306	0,117	0,031	0,208	2,413	3,741	1,837
CRT1	480	1,306	0,119	0,110	0,022	2,396	2,474	4,084
CRT3	480	1,306	0,649	0,327	0,021	0,699	1,385	4,130
CRT5	480	1,306	0,177	0,339	0,590	1,999	1,349	0,795
			Abs 5 min	Abs 10 min	Abs 15 min	In c0/ct 5 min	In c0/ct 10 min	In c0/ct 15 min
MBT0	660	2,022	0,341	0,278	0,878	1,780	1,984	0,834
MBT1	660	2,022	0,273	0,184	0,291	2,002	2,397	1,939
MBT3	660	2,022	0,312	0,365	0,849	1,869	1,712	0,868
MBT5	660	2,022	0,611	0,927	1,107	1,197	0,780	0,602