

## APPENDIX

### SF<sub>6</sub> DREs under different gas composition (110W, 150mL/min)

O <sub>2</sub> concentration	SF <sub>6</sub> concentration									
	2%SF <sub>6</sub>		4%SF <sub>6</sub>		6%SF <sub>6</sub>		8%SF <sub>6</sub>		10%SF <sub>6</sub>	
No O <sub>2</sub> group	95.60%	89.40%	86.34%	90.72%	71.48%	85.30%	64.85%	51.87%	22.35%	16.51%
1%O <sub>2</sub>	94.56%	91.40%	88.53%	91.79%	75.61%	87.73%	53.64%	62.82%	48.32%	60.12%
2%O <sub>2</sub>	96.67%	90.17%	88.44%	90.60%	81.98%	90.86%	70.58%	91.30%	65.66%	76.34%
4%O <sub>2</sub>	90.35%	92.83%	82.57%	90.37%	75.21%	85.97%	78.24%	68.94%	62.89%	66.71%
6%O <sub>2</sub>	85.48%	94.76%	79.26%	81.60%	67.45%	77.29%	44.85%	50.37%	29.86%	21.24%
8%O <sub>2</sub>	80.42%	93.44%	72.88%	76.04%	53.45%	50.07%	44.58%	54.88%	25.32%	16.74%

### EYs under different gas composition (110W, 150mL/min)

O <sub>2</sub> concentration	SF <sub>6</sub> concentration									
	2%SF <sub>6</sub>		4%SF <sub>6</sub>		6%SF <sub>6</sub>		8%SF <sub>6</sub>		10%SF <sub>6</sub>	
No O <sub>2</sub> group	10.0944	9.4397	18.2333	19.1582	22.6427	27.0205	27.3900	21.9078	11.7997	8.7165
1%O <sub>2</sub>	9.9846	9.6509	18.6958	19.3842	23.9510	27.7902	22.6554	26.5327	25.5105	31.7404
2%O <sub>2</sub>	10.2074	9.5211	18.6768	19.1329	25.9688	28.7817	29.8102	38.5615	34.6652	40.3037
4%O <sub>2</sub>	9.5401	9.8019	17.4371	19.0843	23.8243	27.2327	33.0454	29.1175	33.2028	35.2195
6%O <sub>2</sub>	9.0258	10.0057	16.7381	17.2323	21.3661	24.4832	18.9428	21.2743	15.7646	11.2137
8%O <sub>2</sub>	8.4915	9.8663	15.3908	16.0581	16.9314	15.8607	18.8288	23.1791	13.3677	8.8379

### Reaction formula and reaction heat of SF<sub>6</sub> degradation process

No.	Reaction	Reaction heat (kcal/mol)
(9)	$e^* + O_2 \rightarrow O + O + e$	112.51
(10)	$e^* + O_2 \rightarrow O + O^-$	90.57
(11)	$e^* + O_2 \rightarrow O^+ + O + 2e$	324.53
(12)	$O^- \rightarrow O + e$	21.05
(13)	$SF_6 \rightarrow F + SF_5$	86.09
(14)	$SF_5 \rightarrow F + SF_4$	41.46
(15)	$SF_4 \rightarrow F + SF_3$	97.15
(16)	$SF_3 \rightarrow F + SF_2$	53.32
(17)	$SF_2 \rightarrow F + SF$	86.18
(18)	$SF \rightarrow F + S$	113.79
(19)	$SF_5 + O \rightarrow SOF_4 + F$	- 42.53
(20)	$SF_4 + O \rightarrow SOF_4$	- 126.63
(21)	$SF_3 + O \rightarrow SOF_2 + F$	- 77.57
(22)	$SF_2 + O \rightarrow SOF_2$	- 130.89
(23)	$SOF_4 + O \rightarrow SO_2F_2 + 2F$	- 87.39
(24)	$SOF_2 + O \rightarrow SO_2F_2$	- 39.03
(25)	$S + 2O \rightarrow SO_2$	- 274.71
(26)	$SOF_2 + O \rightarrow SO_2 + 2F$	- 68.33
(27)	$2F + O \rightarrow OF_2$	-
(28)	$S_2F_{10} \rightarrow SF_4 + SF_6$	-
(29)	$SiO_2 + 4F \rightarrow SiF_4 + 2O$	-

