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ESR DATING OF OPTICALLY BLEACHED QUARTZ GRAINS: ASSESSING THE IMPACT OF DIFFERENT EXPERIMENTAL SETUPS ON DOSE EVALUATIONS

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1. Intensity evaluation from Al and Ti centre ESR spectra

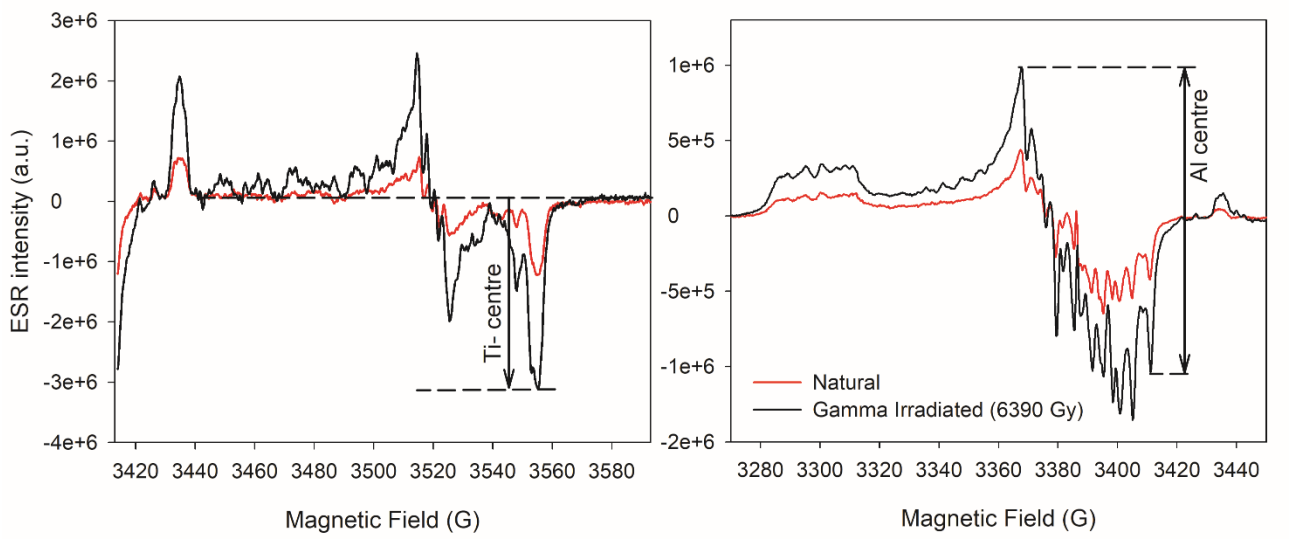


Fig. S-1. *Examples of ESR spectra measured in one quartz sample from Bizat Ruhama site (Israel). Left: Ti centres. Right: Al centre. The evaluation of the ESR intensities is obtained by peak-to-baseline (Ti centre) and peak-to-peak amplitude measurements (Al centre).*

2. Fitting function equations

Table S-1. *Equations of the various fitting functions used in the present work.*

Function	Equation	Fitted parameters
EXP+LIN	$I = Imax * \left(1 - e^{-\left(\frac{D+D_E}{D_0}\right)}\right) + m * (D + D_E)$	(4): Imax, Do, D_E, m
Ti-2	$I = a * \left(\left(e^{-\left(\frac{D+D_E}{D_1}\right)}\right) - \left(e^{-\left(\frac{D+D_E}{D_2}\right)}\right)\right)$	(4): a, D_1, D_2, D_E

3. Influence of temperature on ESR signal

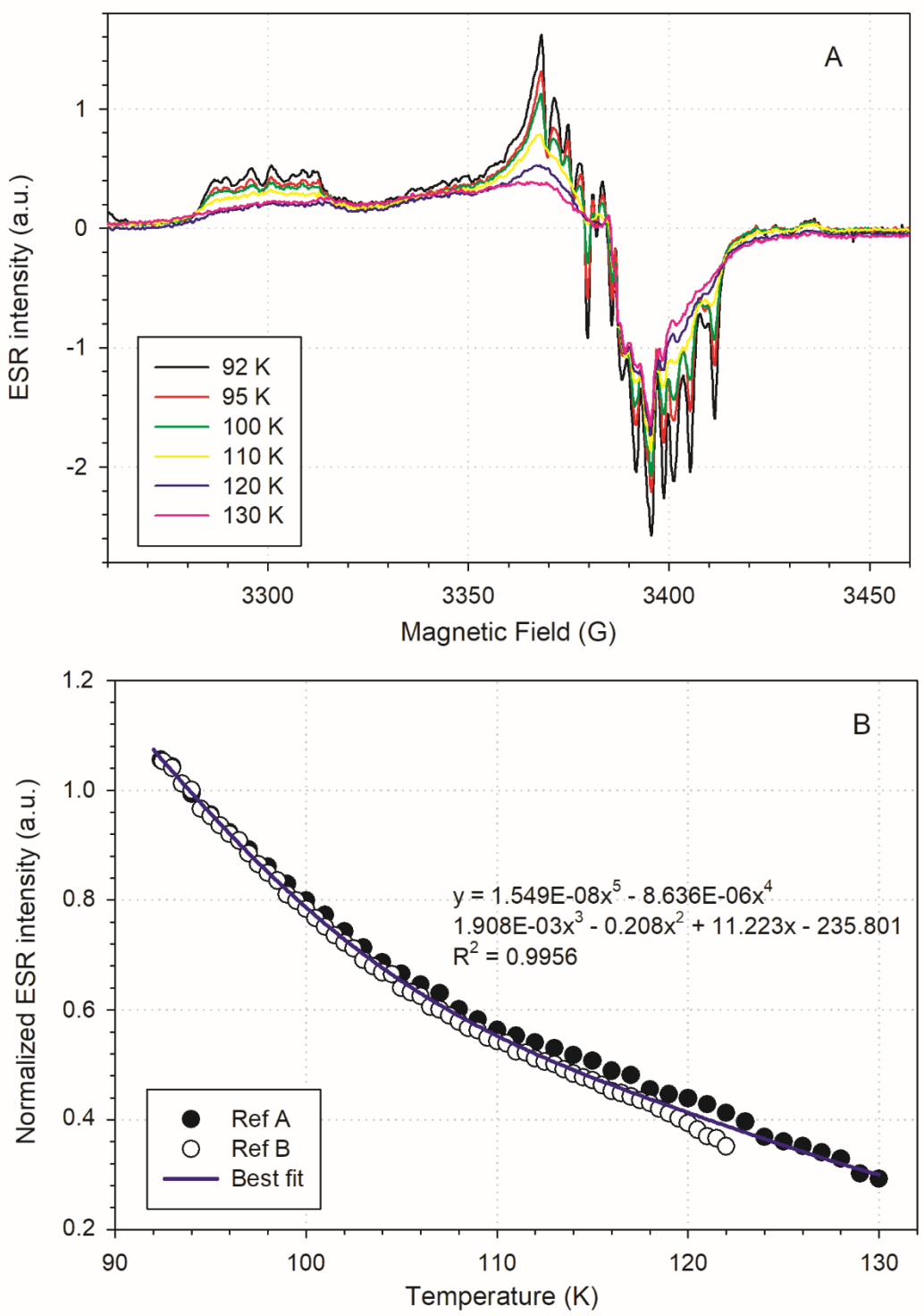
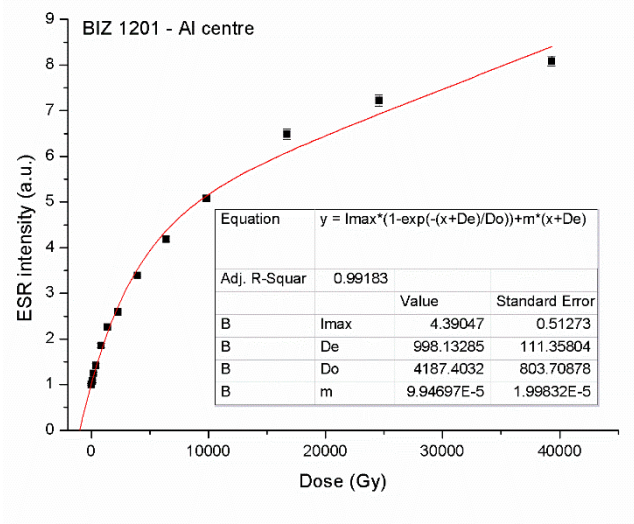


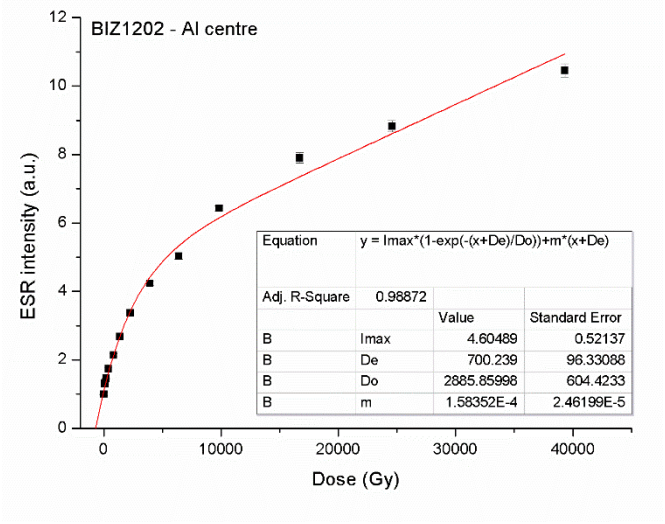
Fig. S-2. *Influence of temperature on the ESR signal of Al centre measured in quartz for setup #2 (A): Evolution of the ESR signal from T = 92 to 130 K. Acquisition parameters: 5 mW microwave power, 1024 points resolution, 20 mT sweep width, 100 KHz modulation frequency, 0.1 mT modulation amplitude, 40 ms conversion time and 1 scan. (B): Evolution of the ESR intensities (normalized for T = 94 K) with temperature. Two samples were measured (A and B) and a polynomial function was fitted through the pooled ESR intensities.*

4. ESR dose response curves

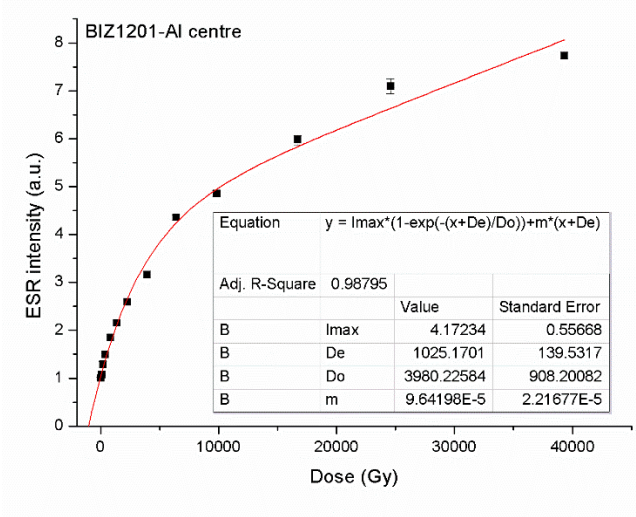
BIZ 1201 Al-Centre: Setup #1



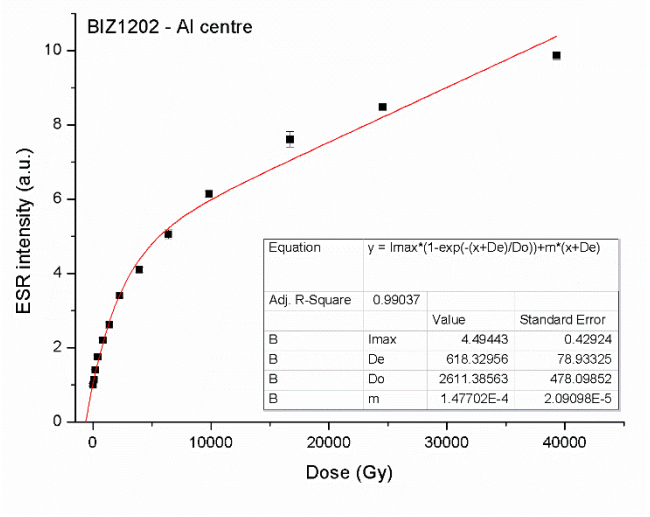
BIZ 1202 Al-Centre: Setup #1



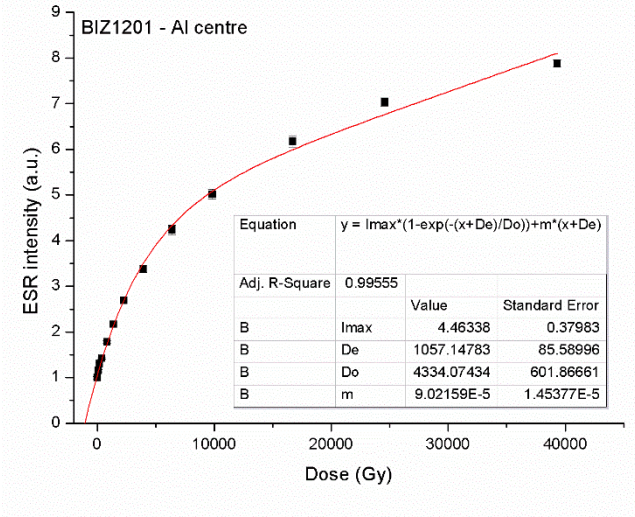
BIZ 1201 Al-Centre: Setup #2



BIZ 1202 Al-Centre: Setup #2



BIZ 1201 Al-Centre: Setup #3



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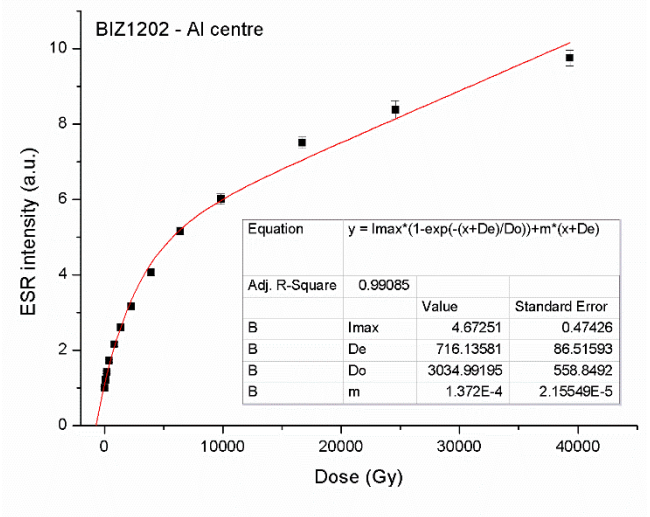
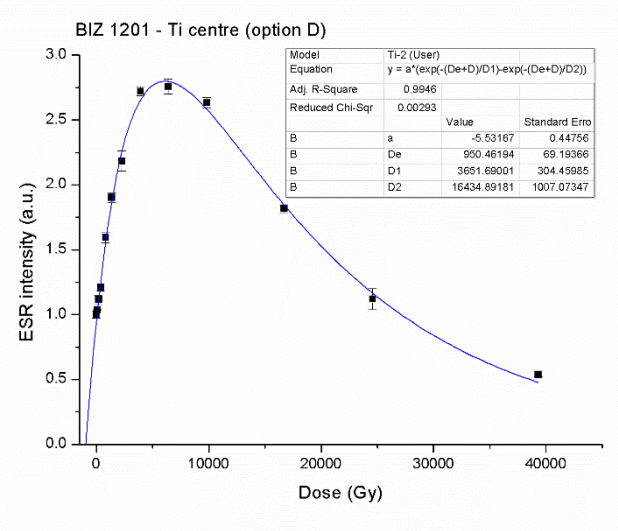


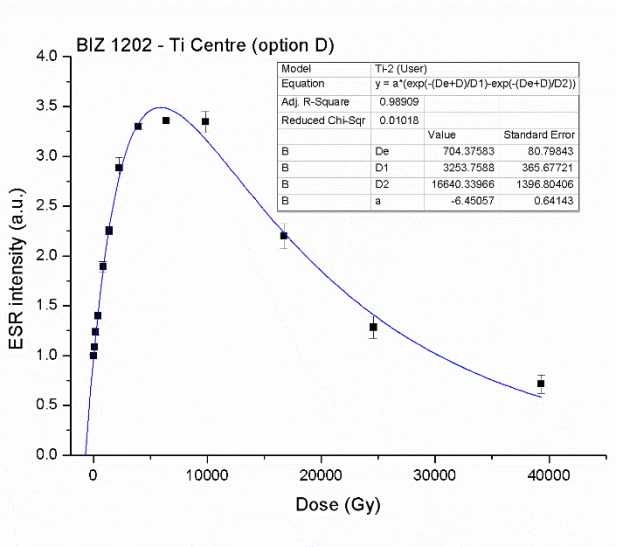
Fig. S-3. *ESR DRCs of the Al centre measured with the three different experimental setups.*

Ti centre DRC

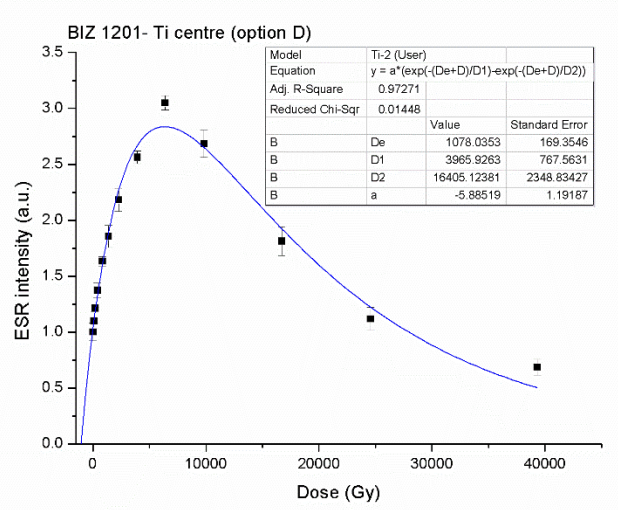
BIZ 1201 Ti-Centre: setup #1



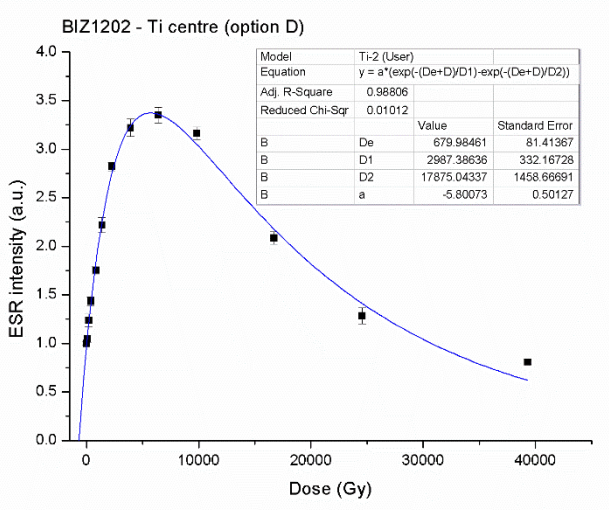
BIZ 1202 Ti-Centre: setup #1



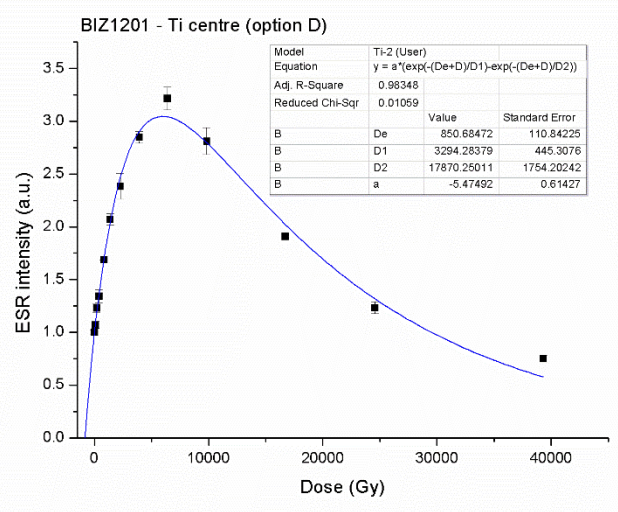
BIZ 1201 Ti-Centre: setup #2



BIZ 1202 Ti-Centre: setup #2



BIZ 1201 Ti-Centre: setup #3



BIZ 1202 Ti-Centre: setup #3

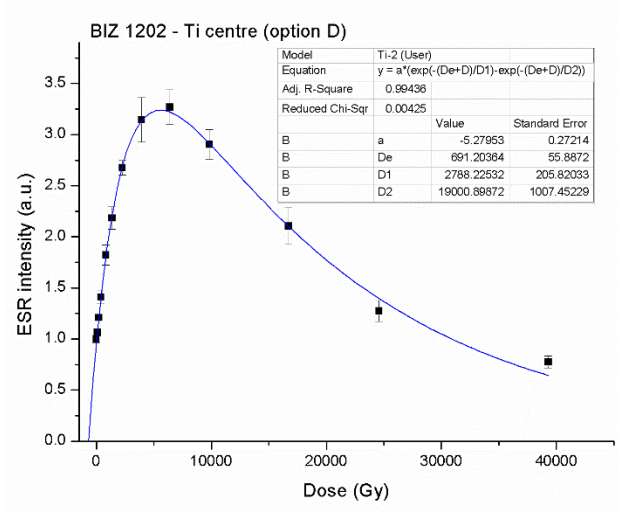


Fig. S-4. *ESR DRCs of the Ti centre (option D) measured with the three different experimental setups.*

5. Fitting results using the three setups

Table S-2. *Fitting results obtained from Al centre, using the three experimental setups.*

			BIZ1201			BIZ1202		
			EXP+LIN			EXP+LIN		
			D_E	±	Adjusted r^2	D_E	±	Adjusted r^2
Al centre	Setup #1	Time1	905	116	0.9894	705	94	0.9896
		Time2	1119	133	0.9905	726	109	0.9869
		Time3	988	106	0.9926	674	93	0.9883
		Final D_E	**998**	**111**	**0.9918**	**700**	**96**	**0.9887**
	Setup #2	Time1	1027	174	0.9817	678	95	0.9885
		Time2	1011	179	0.9808	590	80	0.9890
		Time3	1032	93	0.9943	606	91	0.9866
		Final D_E	**1025**	**140**	**0.9880**	**618**	**79**	**0.9904**
	Setup #3	Time1	992	113	0.9911	659	89	0.9890
		Time2	1123	86	0.9960	744	88	0.9908
		Time3	1060	80	0.9963	743	89	0.9910
		Final D_E	**1057**	**86**	**0.9956**	**716**	**87**	**0.9909**

Table S-3. *Fitting results obtained from Ti centre, using the three experimental setups.*

			BIZ1201			BIZ1202		
			Ti-2			Ti-2		
			D_E	±	Adjusted r^2	D_E	±	Adjusted r^2
Ti centre	Setup #1	Time1	936	92	0.9903	793	81	0.9909
		Time2	949	83	0.9922	641	76	0.9915
		Time3	966	73	0.9942	686	109	0.9793
		Final D_E	**950**	**69**	**0.9946**	**704**	**81**	**0.9891**
	Setup #2	Time1	1040	161	0.9744	645	81	0.9876
		Time2	1179	215	0.9615	646	125	0.9828
		Time3	1016	179	0.9668	754	96	0.9855
		Final D_E	**1078**	**169**	**0.9727**	**680**	**81**	**0.9881**
	Setup #3	Time1	854	136	0.9753	603	101	0.9783
		Time2	864	128	0.9789	762	101	0.9839
		Time3	824	85	0.9897	740	70	0.9920
		Final D_E	**851**	**111**	**0.9835**	**691**	**56**	**0.9944**