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Capillary Gel Electrophoresis with Sinusoidal Voltammetric Detection: A Strategy to
Allow Four-"Color" DNA Sequencing

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Supporting Information

The synthesis of the N-hydroxy-succinimidyl (NHS) esters of ferrocene carboxylic acid and ferrocene acetic acid were checked by ^1H -NMR (Varian Inova 300 MHz).

Figure S-1. ^1H -NMR spectrum of the NHS ester of ferrocene carboxylic acid in DMSO. The chemical shifts are: δ 2.51 (DMSO), 2.88 (s. 4H.), 3.33 (s. H_2O), 4.43 (s. 5H.), 4.74 (t. 2H.), 4.97 (t. 2H.).

Figure S-2. ^1H -NMR spectrum of the NHS ester of ferrocene acetic acid in DMSO. The chemical shifts are: δ 2.51 (DMSO), 2.85 (s. 4H.), 3.33 (s. H_2O), 3.79 (s. 2H.), 4.17 (s. 2H.), 4.20 (s. 5H.), 4.31 (s. 2H.).

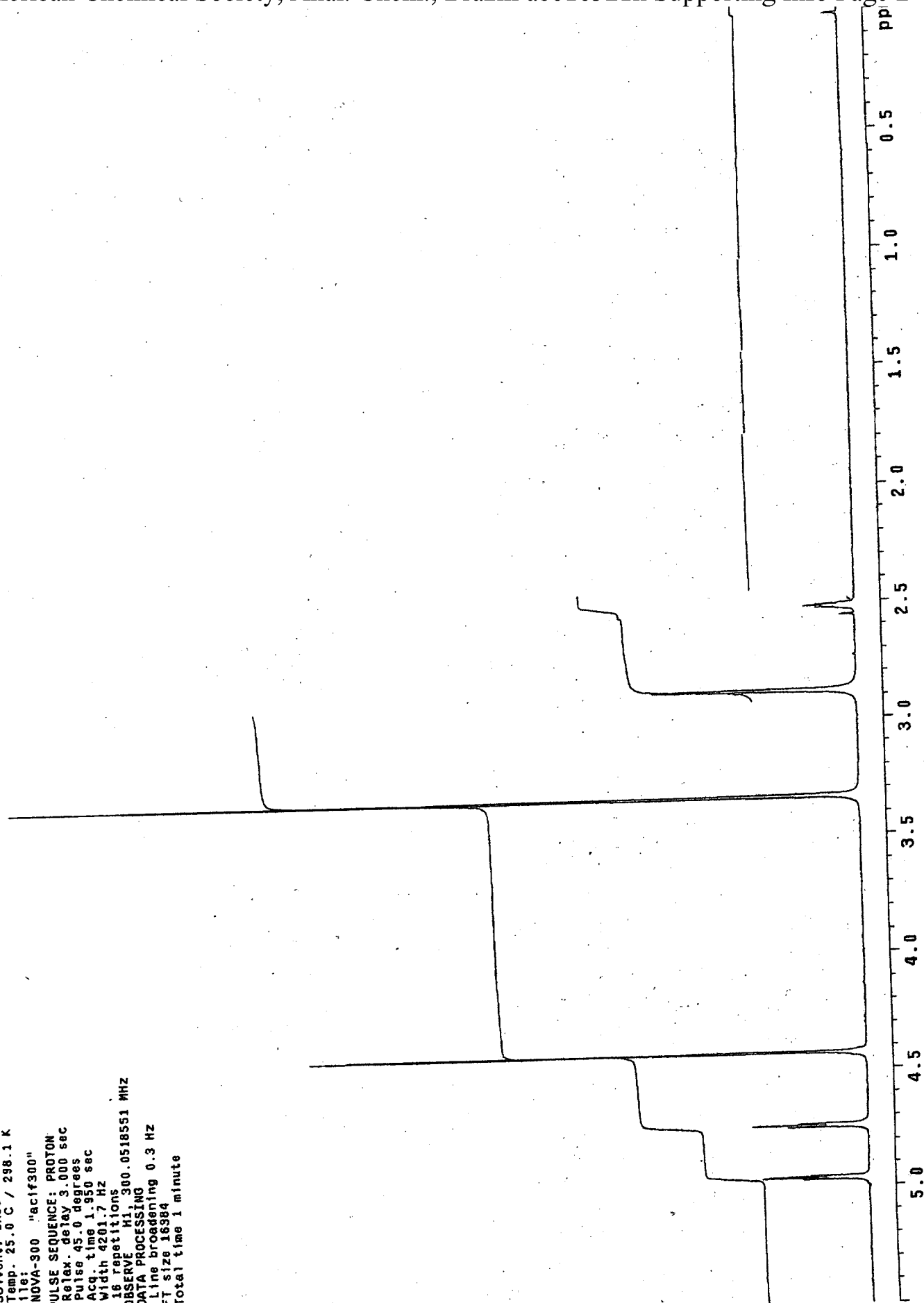
The coupling of the NHS ester of ferrocene carboxylic acid and ferrocene acetic acid to the amine terminated T3 primer was checked by Matrix Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometry (MALDI-TOF) on a Voyager DE-STR (PerSeptive Biosystems, Foster City, CA) instrument. The instrument was run in positive linear mode.

Figure S-3. Shown is the MALDI-TOF spectrum of ferrocene carboxylate tagged T3 primer in 3-hydroxypicolinic acid matrix. The calculated m/z for this molecule is 6486 and the m/z found was 6482. This lies within the 0.1 % error for the instrument.

Figure S-4. Shown is the MALDI-TOF spectrum of ferrocene acetate tagged T3 primer in 3-HPA matrix. The calculated m/z for this molecule is 6500 and the m/z found was 6496.

Sequence for Reverse Primers used to make FC-159 mer and FC-268 mer:
5' ACTCACTATAGGGCGAATTG 3' (reverse primer for the 159 length fragment)
5' TTACGCCAGCTGGCGAAAGG 3' (reverse primer for the 268 length fragment)

SAB - FC-NHS (1H, DMSO)
Pulse Sequence: PROTON
Solvent: DMSO
Temp. 25.0 C / 298.1 K
File:
INOVA-300 "acif300"
PULSE SEQUENCE: PROTON
Relax. delay 3.000 sec
Pulse 45.0 degrees
Acq. time 1.950 sec
Width 4201.7 Hz
16 repetitions
OBSERVE H1 300.0518551 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 16384
Total time 1 minute



SAB - FEAA-NHS (1H, DMSO)

exp1 PROTON

SAMPLE		SPECIAL		25.0
date	Dec 11 2000	temp	not used	
solvent	DMSO	gain	19	
file	/data/switzer~	spn	0.008	
/PHKIM - VNMR Data~	nst	9.700		
/SAB.FEAA-NHS.1H.D~	pw90	6.000		
	MSD	alpha		
ACQUISITION		FLAGS		
sw	4201.7	tl	n	
at	1.950	in	n	
np	16384	dp	y	
fb	2000	hs	nn	
bs	16	lb	0.30	
d1	3.000	fn	not used	
nt	16	fn	not used	
ct	16	fn	not used	
TRANSMITTER		H1		
tn	300.053	rf1	1893.9	
sfrq	300.053	rf1	1347.7	
tof	0	rfp	747.1	
tpwr	58	tp	-84.9	
pw	4.850	tp	-83.2	
DECOUPLER		C13		
dn	0	sc	250	
dof	0	sc	8	
dm	nnn	vs	140	
dmm	c	th	54	
dpwr	92	ai	cdc	
dmf	10787	ph		

