Supporting Information

Low cost platform for multiplexed electrochemical melting curve analysis

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Table S-1. Oligonucleotides used for the melting curve analysis in this study: capture probes, 21-mer targets, 124-mer targets, and the primers used to generate the ferrocene-targets by asymmetric-PCR. (The regions of the target sequences complementary to the capture probes are underlined)

Oligonucleotides	**Sequences (5` to 3`)**	
Approach 1: 21-mer targets		
Wild type (Full complementary)	5'-Fc-CGAAGTGTGAACTAGTCCCAC-3´	
SNP at the top	5´-Fc- **A**GAAGTGTGAACTAGTCCCAC-3´	
SNP at the middle	5´-Fc-CGAAGTGTGAA**A**TAGTCCCAC-3´	
SNP at the bottom	5´-Fc-CGAAGTGTGAACTAGTCCCA**A**-3´	
Approach 2 (4 Fc-targets / 1 capture probe**) and Approach 3 (**1 Fc-target / 4 capture probes**): 124-mer targets**		
No SNP (Full complementary)	5`-AGCTCCAGAAGATAAATTACAGGCGAAGTGTGAACTAGTCCCACCACCTTAATTTCACTGTGTGTTAACACTTGTAAAGAACCTGCATAATGTGTGTATCTTACAACTAGGATACTATGACCCC-3`	
SNP at the top	5`-AGCTCCAGAAGATAAATTACAGGCGAAGTGTGAACTAGTCCCA**A**CACCTTAATTTCACTGTGTGTTAACACTTGTAAAGAACCTGCATAATGTGTGTATCTTACAACTAGGATACTATGACCCC-3`	
SNP at the middle	5´-AGCTCCAGAAGATAAATTACAGGCGAAGTGTGAA**A**TAGTCCCACCACCTTAATTTCACTGTGTGTTAACACTTGTAAAGAACCTGCATAATGTGTGTATCTTACAACTAGGATACTATGACCCC-3`	
SNP at the bottom	5´-AGCTCCAGAAGATAAATTACAGG**A**GAAGTGTGAACTAGTCCCACCACCTTAATTTCACTGTGTGTTAACACTTGTAAAGAACCTGCATAATGTGTGTATCTTACAACTAGGATACTATGACCCC-3`	
PCR primers for Ferrocene incorporation	Fc-Forward primer	5´-Fc-AGCTCCAGAAGATAAATTACAGG-3`
	Reverse primer	5´-pho-GGGGTCATAGTATCCTAGTTG-3`
Capture probes for all approaches		
Full complementary to the target (thiol 3´-)	5´-GTGGGACTAGTTCACACTTCGTTT-3´-Thiocticacid	
SNP at the top	5´-**A**TGGGACTAGTTCACACTTCGTTT-3´-Thiocticacid	
SNP at the middle	5´-GTGGGACTA**A**TTCACACTTCGTTT-3´-Thiocticacid	
SNP at the bottom	5´-GTGGGACTAGTTCACACTTC**A**TTT-3´-Thiocticacid	
Surface control		
Fc-DNA-thiol	5´-Fc-GTGGGACTAGTTCACACTTCGTTT-3´-C6-Thiol	

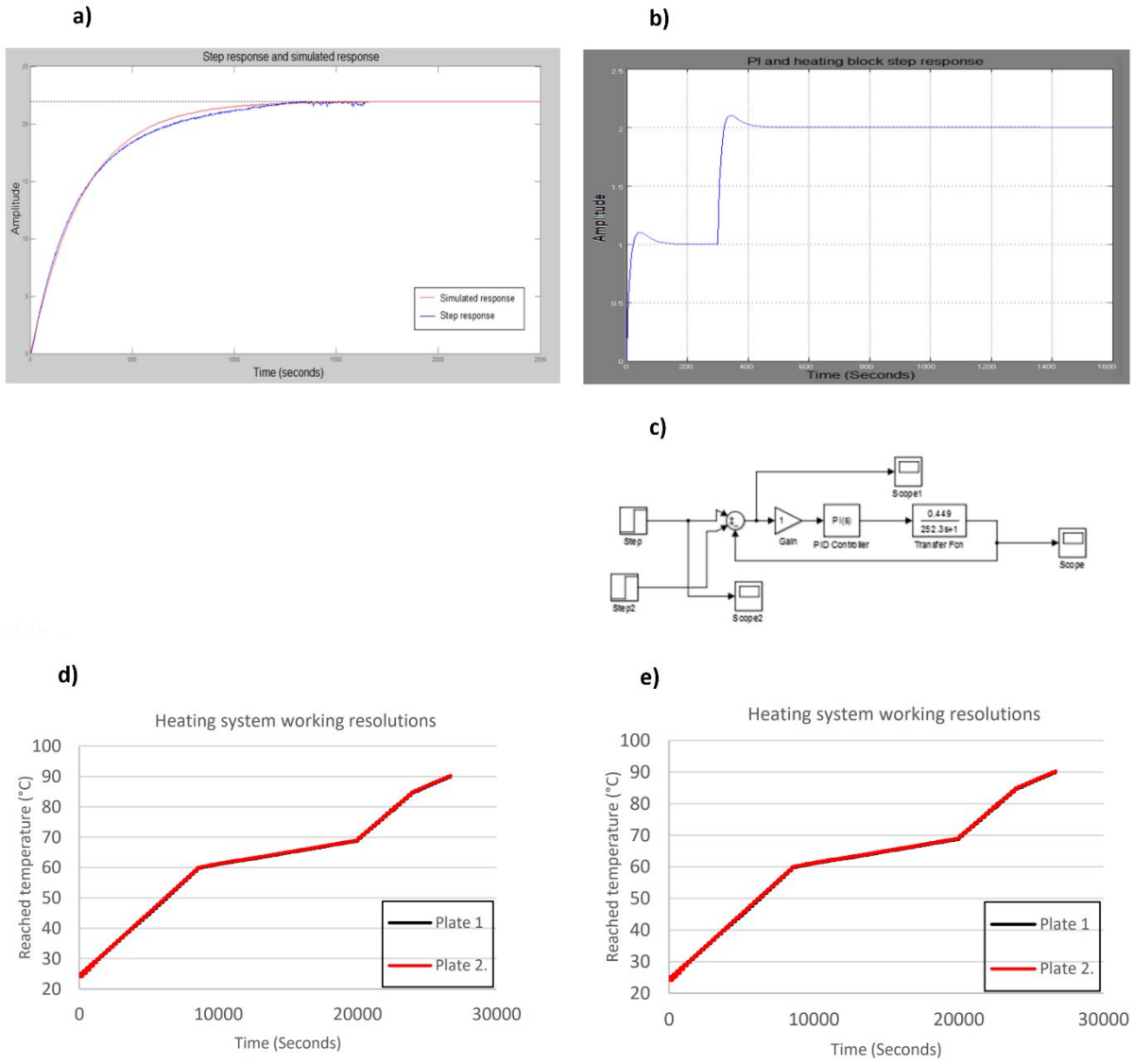

Figure S-1 (a) Step response and simulated transfer function of the heating plate 1 obtained with Matlab; (b) Modelled closed loop response of the PID controller in series with the heating block; (c) Modelled system of the PID controller in series with the transfer function plate that simulates the behaviour of the heating plate 1; (d) Example of the system's behaviour for a heating test starting at 25°C and finishing at 90°C. Both heating plates produced a stable output; (e) The heating ramp of the complete system with a glass slide – PMMA template in the middle of the heating plates.

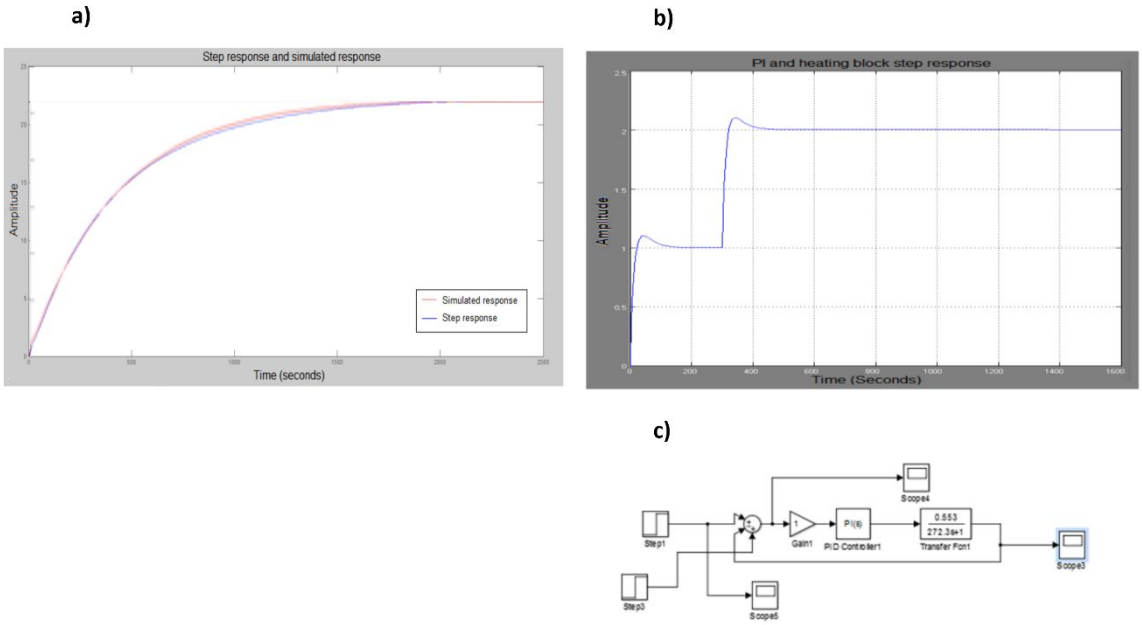

Figure S-2 (a) Step response and simulated transfer function of the heating plate 2 obtained with Matlab; (b) Modelled closed loop response of the PID controller in series with the heating block; (c) Modelled system of the PID controller in series with the transfer function plate that simulates the behaviour of the heating plate 2.

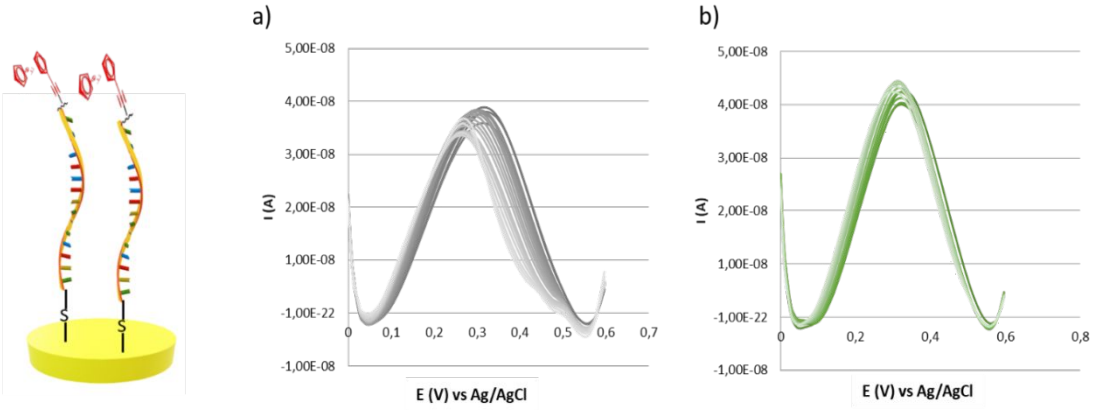

Figure S-3 (a) Repetitive SWVs of double functionalized Fc-DNA-SH on gold surface with temperature ramping; (b) Repetitive SWVs of double functionalized Fc-DNA-SH on gold surface during 1 h at 25°C.

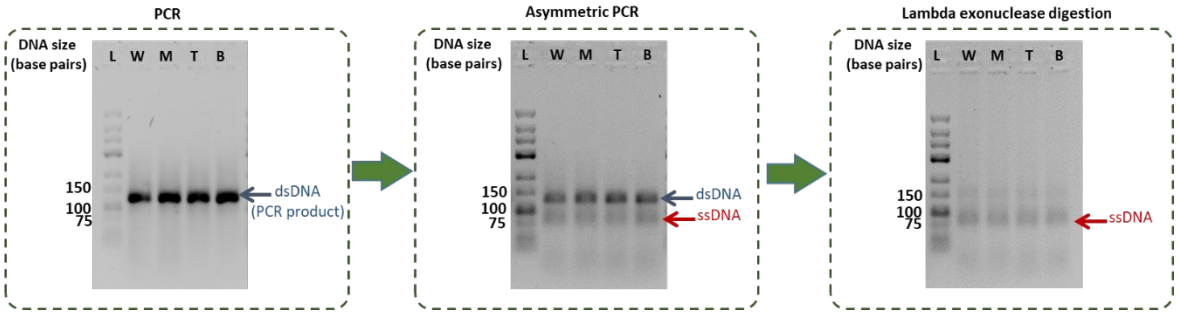

Figure S-4 Agarose gel electrophoresis after each step of the single-stranded redox labelled PCR amplicon generation based on a combination of asymmetric PCR and Lambda exonuclease digestion.