

ESI Table 1: Software protocol for H₂O₂ degradation measurements.

' Define ports. Inactivate trigger.

Hardware Settings portname (number, string) 1, waste
Hardware Settings portname (number, string) 2, flowcell
Hardware Settings portname (number, string) 3, blank
Hardware Settings portname (number, string) 4, sample
Hardware Settings portname (number, string) 5, spare
Hardware Settings portname (number, string) 6, beads
Analog:Digital Module TTL Line On (#) 0

' Load bead column.

Insert File C:\Bead load.fia

' Prime sample inlet.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 50
SyringePump Aspirate (microliter) 600
SyringePump Delay Until Done
SyringePump Valve Out
Valve sample
SyringePump Flowrate (microliter/sec) 20
SyringePump Aspirate (microliter) 100
SyringePump Delay Until Done
SyringePump Flowrate (microliter/sec) 50
Valve waste
SyringePump Empty
SyringePump Delay Until Done

' Fill pump. Aspirate sample.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 100
SyringePump Aspirate (microliter) 500
SyringePump Delay Until Done
SyringePump Valve Out
Valve sample
SyringePump Flowrate (microliter/sec) 20
SyringePump Aspirate (microliter) 500
SyringePump Delay Until Done

' Dispense sample solution into flowcell.

' Trigger conditioning voltammogram.

SyringePump Flowrate (microliter/sec) 10
Valve flowcell
SyringePump Dispense (microliter) 200
Delay (sec) 2
Analog:Digital Module TTL Line Off (#) 0
Delay (sec) 5
Analog:Digital Module TTL Line On (#) 0
SyringePump Delay Until Done

' DEGRADATION MEASUREMENTS

' Trigger voltammogram acquisition for time pt "0 min".

Analog:Digital Module TTL Line Off (#) 0
Delay (sec) 2
Analog:Digital Module TTL Line On (#) 0

' Trigger voltammogram acquisitions for time pts "1-3min".

Loop Start (#) 3
Delay (sec) 56
Analog:Digital Module TTL Line Off (#) 0
Delay (sec) 2
Analog:Digital Module TTL Line On (#) 0
Loop End

' Discard solution in pump & holding coil.

Valve waste
SyringePump Flowrate (microliter/sec) 100
SyringePump Empty
SyringePump Delay Until Done

' BACKGROUND MEASUREMENT

' Prime blank inlet.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 50
SyringePump Aspirate (microliter) 100
SyringePump Delay Until Done
SyringePump Valve Out
Valve blank
SyringePump Flowrate (microliter/sec) 50
SyringePump Aspirate (microliter) 20
SyringePump Delay Until Done
SyringePump Flowrate (microliter/sec) 50
Valve waste
SyringePump Empty
SyringePump Delay Until Done

' Fill pump. Aspirate blank.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 100
SyringePump Aspirate (microliter) 500
SyringePump Delay Until Done
SyringePump Valve Out
Valve blank
SyringePump Flowrate (microliter/sec) 50
SyringePump Aspirate (microliter) 500
SyringePump Delay Until Done

' Dispense blank solution into flowcell.

' Trigger conditioning voltammogram.

SyringePump Flowrate (microliter/sec) 10
Valve flowcell
SyringePump Dispense (microliter) 200
Delay (sec) 2
Analog:Digital Module TTL Line Off (#) 0
Delay (sec) 5
Analog:Digital Module TTL Line On (#) 0
SyringePump Delay Until Done

' Trigger voltammogram acquisition for bkg measurement.

Analog:Digital Module TTL Line Off (#) 0
Delay (sec) 5
Analog:Digital Module TTL Line On (#) 0

' Discard solution in pump & holding coil.

Valve waste
SyringePump Flowrate (microliter/sec) 50
SyringePump Empty
SyringePump Delay Until Done

' Discard bead column.

Insert File C:\Bead flush.fia

ESI Table 2: Software protocol for loading beads.

' Define ports.

Hardware Settings portname (number, string) 1, waste
Hardware Settings portname (number, string) 2, flowcell
Hardware Settings portname (number, string) 3, blank
Hardware Settings portname (number, string) 4, sample
Hardware Settings portname (number, string) 5, spare
Hardware Settings portname (number, string) 6, beads

' Fill syringe.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 30
SyringePump Aspirate (microliter) 200
SyringePump Delay Until Done

' Flush bead inlet. Aspirate beads.

SyringePump Valve Out
Valve beads
SyringePump Flowrate (microliter/sec) 30
' Push old solution in inlet tubing to bead vial.
' 20 uL = inlet tubing vol (10 cm of 0.02" i.d.)
SyringePump Dispense (microliter) 20
SyringePump Delay Until Done
SyringePump Aspirate (microliter) 80
SyringePump Delay Until Done

' Dispense beads into flowcell.

SyringePump Flowrate (microliter/sec) 10
Valve flowcell
SyringePump Empty
SyringePump Delay Until Done

' Discard possible excess beads to waste.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 30
SyringePump Aspirate (microliter) 200
SyringePump Delay Until Done
SyringePump Valve Out
SyringePump Flowrate (microliter/sec) 50
Valve waste
SyringePump Empty
SyringePump Delay Until Done

ESI Table 3: Software protocol for discarding beads.

' Define ports.

Hardware Settings portname (number, string) 1, waste
Hardware Settings portname (number, string) 2, flowcell
Hardware Settings portname (number, string) 3, blank
Hardware Settings portname (number, string) 4, sample
Hardware Settings portname (number, string) 5, spare
Hardware Settings portname (number, string) 6, beads

' Fill pump.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 50
SyringePump Aspirate (microliter) 400
SyringePump Delay Until Done

' Aspirate beads out of flowcell.

SyringePump Valve Out
Valve flowcell
SyringePump Flowrate (microliter/sec) 20
SyringePump Aspirate (microliter) 200
SyringePump Delay Until Done

' Discard beads to waste.

Valve waste
SyringePump Flowrate (microliter/sec) 50
SyringePump Dispense (microliter) 600
SyringePump Delay Until Done

' Fill pump.

SyringePump Valve In
SyringePump Flowrate (microliter/sec) 50
SyringePump Aspirate (microliter) 600
SyringePump Delay Until Done

' Push possible remaining beads out of flowcell.

SyringePump Valve Out
Valve flowcell

SyringePump Flowrate (microliter/sec) 300

Loop Start (#) 5
 SyringePump Aspirate (microliter) 2
 SyringePump Delay Until Done
 SyringePump Dispense (microliter) 100
 SyringePump Delay Until Done
Loop End

SyringePump Flowrate (microliter/sec) 200
SyringePump Empty
SyringePump Delay Until Done