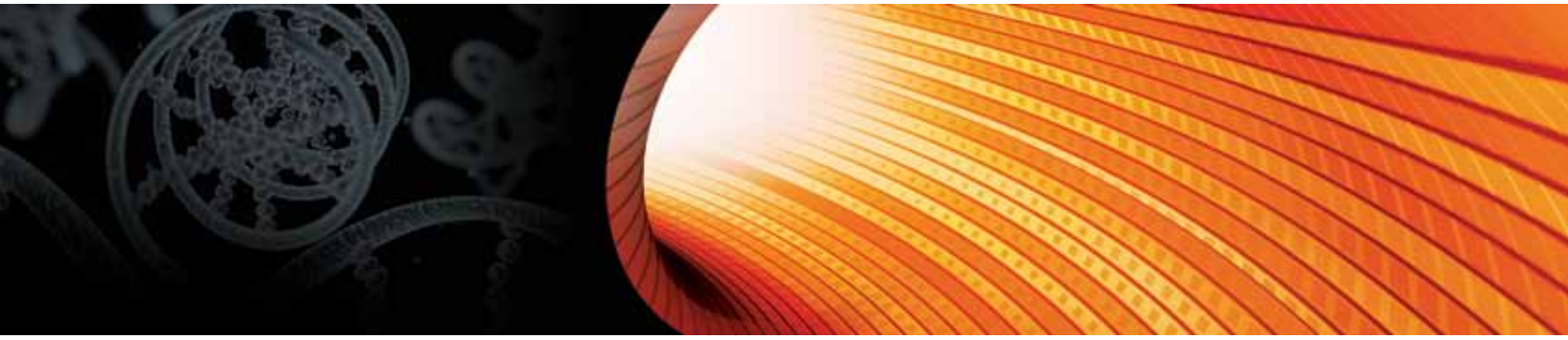
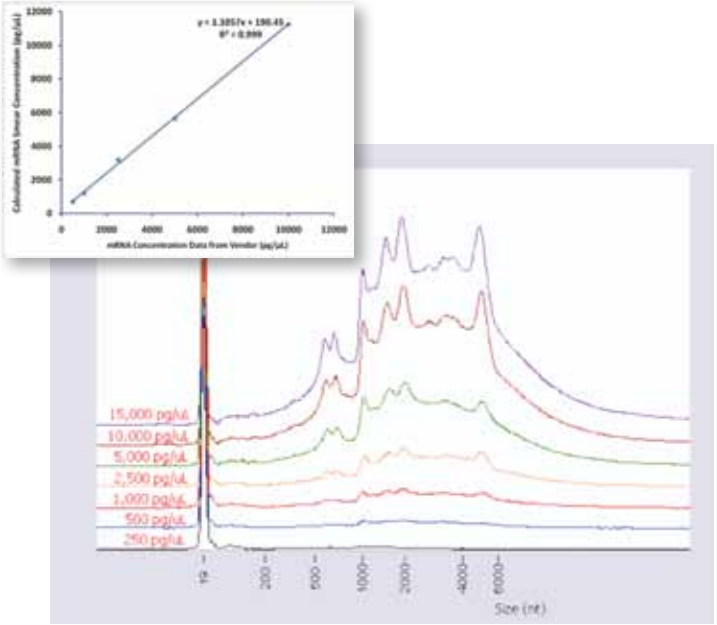
# *mRNA Analysis*

ADVANCED ANALYTICAL

## CAPILLARY ELECTROPHORESIS SYSTEMS AND REAGENTS FOR AUTOMATED, RAPID AND SENSITIVE DETECTION OF mRNA



Quality and quantity of mRNA are critical for RNA profiling techniques, such as RT-PCR and microarray analysis. Because of the scarcity of mRNA quantity and the susceptibility to degradation, it is important to have a reliable and sensitive technique with low sample consumption to assess mRNA quality. Manual assessment methods such as gel electropherosis can use large amounts of precious materials and take a long time to complete. Several analytical instruments for the evaluation of mRNA either lack detection sensitivity, high sample consumption, or require tedious chip loading procedures. Unlike other instruments, the *Fragment Analyzer*™ Automated CE System utilizes a completely automated process for mRNA analysis with minimal sample consumption and high sensitivity.




| Specification | Description |
|---|---|
| Sample Volume Required | 2 µL |
| Number of Samples per Run | 94 (+ 2 wells RNA Ladder) |
| Total Run Time | 90 min (including Conditioning and CE Separation) |
| Sizing Accuracy[1] | ±20% |
| Sizing Precision[1] | ±10% RSD |
| Limit of Detection (S/N > 3) | 250 pg/µL |
| Qualitative Range (per smear) | 250 pg/µL - 15000 pg/µL |
| Quantitative Range (per smear) | 500 pg/µL – 10000 pg/µL |
| Quantification Accuracy[1] | ±30% |
| Quantification Precision[1] | ±20% RSD |

*[1]Results using RNA Ladder as sample*

## COMPARISON OF THE *FRAGMENT ANALYZER*™ AUTOMATED CE SYSTEM METHOD TO THE MANUAL METHOD FOR MRNA ANALYSIS

### *Fragment Analyzer*™ Automated CE System method

1. Equilibrate all reagents to room temperature
2. Prepare gel-dye mix and use within one day
3. Prepare marker diluent
4. Pipette 2µL samples/ladder into 96-well plate
5. Pipette in 18µL marker diluent into samples/ladder wells
6. Pipette 20µL blank solution into unused well
7. Centrifuge sample plate and use within an hour
8. Load sample plate and inlet buffer tray
9. Start method
10. Analyze results
11. Generate report

### Manual method

1. Remove chip from bag
2. Assemble chip priming station
3. Decontaminate electrodes
4. Equilibrate gel to room temperature
5. Filter gel, aliquot gel and store in dark at 4°C
6. Equilibrate all reagents to room temperature
7. Prepare gel-dye mix and use within one day
8. Pipette 9µL of gel-dye mix and prime chip manually
9. Remove chip from priming station
10. Pipette 9µL of gel-dye mix into 2 more wells on chip
11. Pipette 5µL marker into each sample well and ladder well
12. Pipette 1µL ladder/sample into corresponding wells
13. Pipette 1µL buffer into unused well
14. Pipette 5µL marker into unused well
15. Place loaded chip onto vortexer
16. Vortex for 60 second
17. Load chip and begin run within 5 minutes
18. Start method
19. Analyze results
20. Generate report

The results show that the *Fragment Analyzer*™ Automated CE System can be used to automate both separation and subsequent analysis of mRNA, freeing up precious laboratory time and improving overall throughput by eliminating the manual process to prepare, load and handle the chip preparations. The superior design of the *Fragment Analyzer*™ Automated CE System allows analysis of 11 samples with 1 ladder or 94 samples with 2 ladders per run, greatly reducing workload.

## FEATURES/BENEFITS

> **High Sensitivity** – Detection limits as low as 250 pg/µL

> **Short Run Time** – Analysis of 12 or 96 samples in less than 60 minutes

> **No Manual Priming** – Fully automate full conditioning to prepare for sample analysis

> **No Chip Loading** – Separation gel is automatically loaded into capillaries prior to each run

> **Automated Sample Handling** – Simply load diluted 96-well sample plate onto the instrument

> **Flexible Platform Design** – Use the system for more than just mRNA. Gel kits for total RNA, NGS fragment analysis, dsDNA fragments from 10 bp – 40,000 bp are available.

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