

## TruCell2 Java Curve Fit Program

This program is used to generate the parameters for the curve fit that the TruCell®2 Transmitter uses to convert raw AU data into user-defined process units. For example, it could be used to convert from raw AU to cell density (cells/l), optical density (OD), or dry cell weight (g/l).

Generally cells produce as much scattering as absorption, so the raw AU data will not follow Beer's Law in cellular media. In most cases, the relationship between raw AU and cell density will not be linear. Please refer to the application note entitled "Primer" for more details.

The program receives a file containing both AU and process data from a growth run, and fits that data to the equation:

$$y_{AU} = A+B \left( 1 - e^{-\frac{x_{PU}}{C}} \right) + D \cdot x_{PU}$$

where  $x_{PU}$  is in the process units (PU) and  $y_{AU}$  is in AU.

A Levenberg-Marquardt algorithm performs the curve fit. In order to improve accuracy, users should also supply minimum and maximum expected process values for their measurements. The plot range will automatically be set to these values (which are likely to be beyond the data range).

### Features

- Ease of use
- Only needs one process run
- Automatically calculates conversion
- Outputs transmitter parameters
- Run on any computer

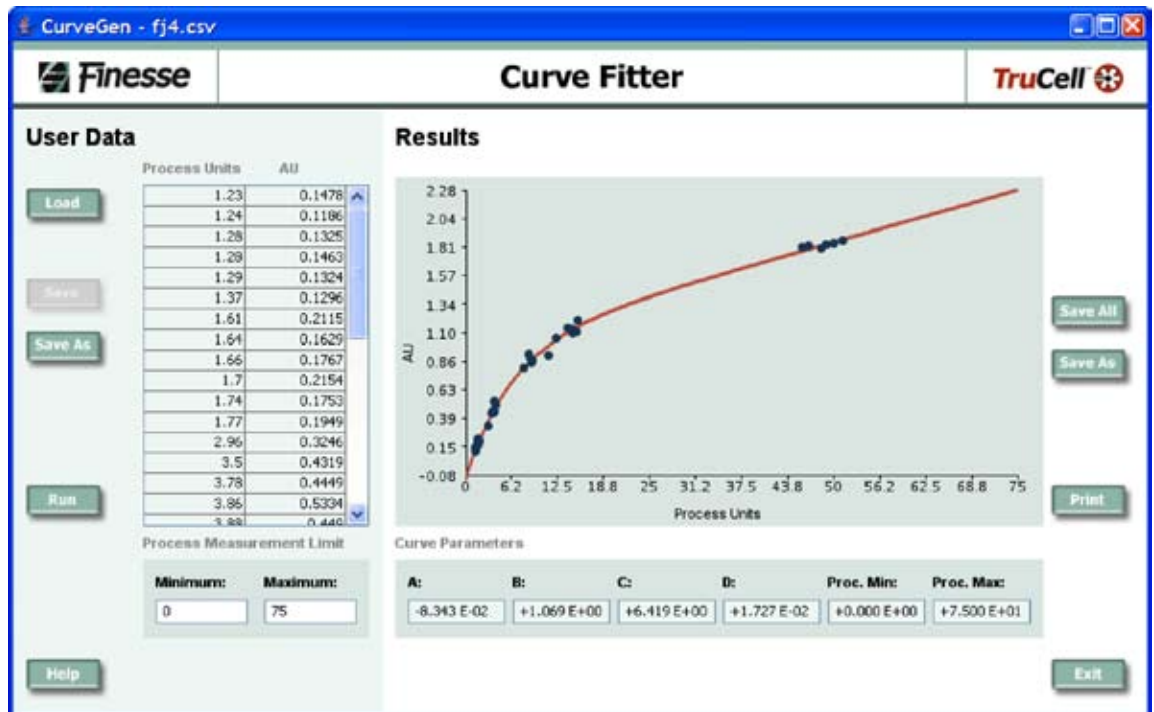


Figure 1: Curve Fit program Screen.

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