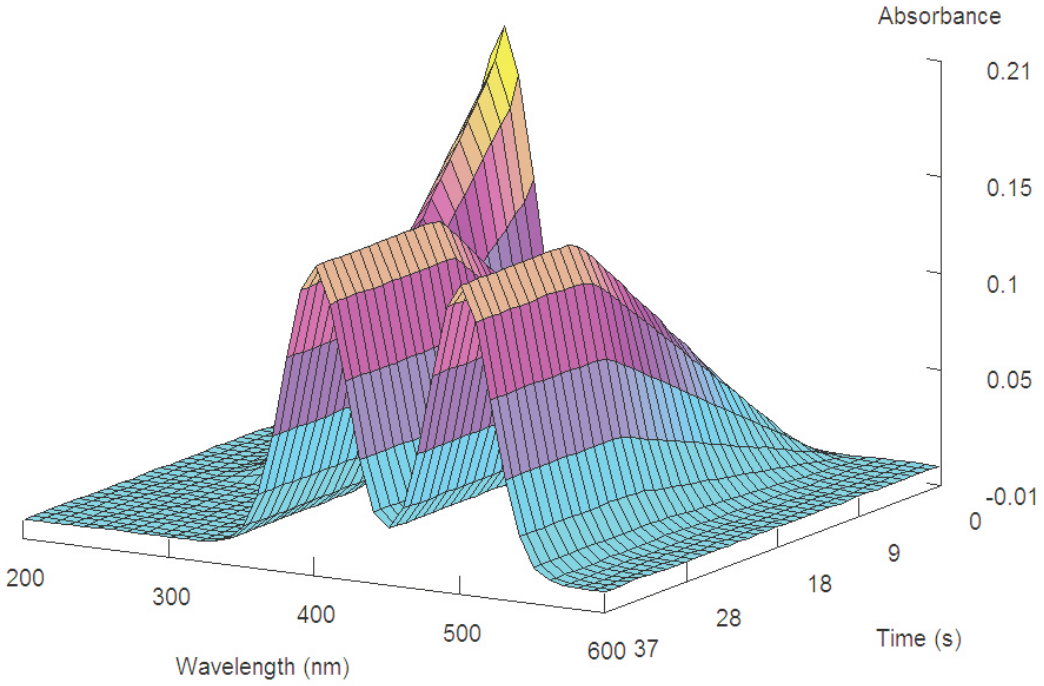
**AppliedPhotophysics**

*Ultrasensitive Spectroscopy for the Life Sciences*

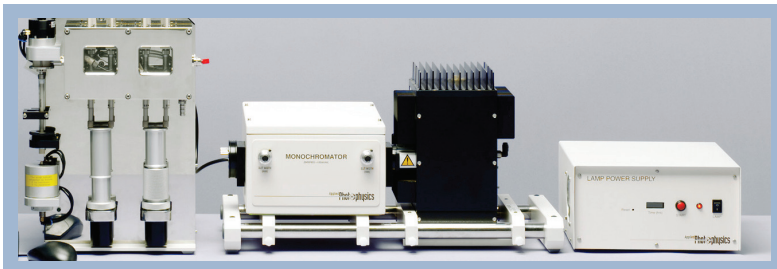
**TECHNICAL DATASHEET**

# Pro-KIV™ Kinetic Analysis & Data Simulation Software




Pro-Kineticist IV (Pro-KIV™) is a user friendly software that enables global fitting to multi-wavelength kinetic datasets; simultaneously fitting each kinetic trace to the reaction model.

The kinetic parameters obtained satisfy all the wavelength data at each time point and can therefore provide a more robust fit than single wavelength analysis, allowing the study of more complex reactions.



- User friendly software
- Fits multi-wavelength (or single wavelength) kinetic data to a given reaction model
- Singular value decomposition (SVD) to identify key spectral changes
- Identify short lived intermediates
- Fitting performed directly to reaction models using numerical integration
- Excellent data viewing facilities including three dimensional plots
- View concentration profiles and calculated spectra of reacting species
- Compatible with Windows Vista and 7

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| Pro-KIV™ Technical Specifications | |
|---|---|
| Loading Data | Applied Photophysics Spectra-Kinetic data (DSX) files and Comma-Separated Values (CSV)files. |
| Data Display | Data can be shown as a three dimensional plot with the ability to rotate both the X and the Y axes in order to change the perspective of the plot. |
| Model Entry | A model consists of the equations, species information, and parameters that constitute the reaction being analysed. The key feature of the analysis is the global fitting of the entire dataset to a supplied chemical reaction scheme. |
| Singular Value Decomposition (SVD) | Application of SVD as a data reduction system identifies the key spectral changes occuring in the reaction and can remove noise from the data set to speed up the subsequent analysis. |
| Data Analysis | Calculate the rate constants which give the closest fit to the original data. This is achieved by performing several iterations of the non-linear least squares fitting process. |
| Model Validity | Convergence of a fit indicates that a least squares minimum for that model to the data has been found. |
| Displaying Results | View the Calculated Data (the modelled best fit dataset), Residual, Calculated Spectra and Concentration Profile displays. |
| Compatibility | All SX, Pistar and LKS series of stopped-flow and laser flash spectrometers. Data from other instruments can be imported in CSV format. |
| System Requirements | Pro-KIV is a 32bit application designed to run on PCs or compatibles running Microsoft Windows Vista and Windows 7. |

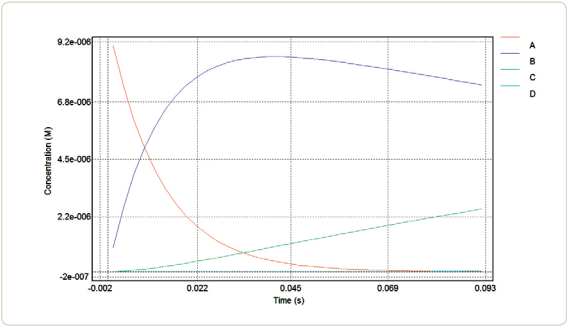


Figure1. Concentration profiles calculated from a real data set. The plot shows how the concentration of each reacting species changes in the early stages of the reaction.

Pro-KIV includes a wealth of tools for viewing data and rapidly assessing the quality of fitted data. Singular Value Decomposition (SVD) of the dataset, accessible through a single-mouse click, provides a model-free assessment of the number of spectrally distinct reaction components present in the reaction. For global analysis of data sets, Pro-KIV uses an innovative reaction scheme editor in combination with numerical integration techniques to enable fitting. Reaction models are entered in the form of simple steps e.g. A + B > C, C <> D, D > E. The use of numerical integration places almost no limit on the level of complexity of the reaction model.

## Typical applications

- Enzyme Kinetics
- Dual / multi-wavelength fluorescence experiments
- Redox reactions
- Photochemistry

And more...

4100Q008.C01

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