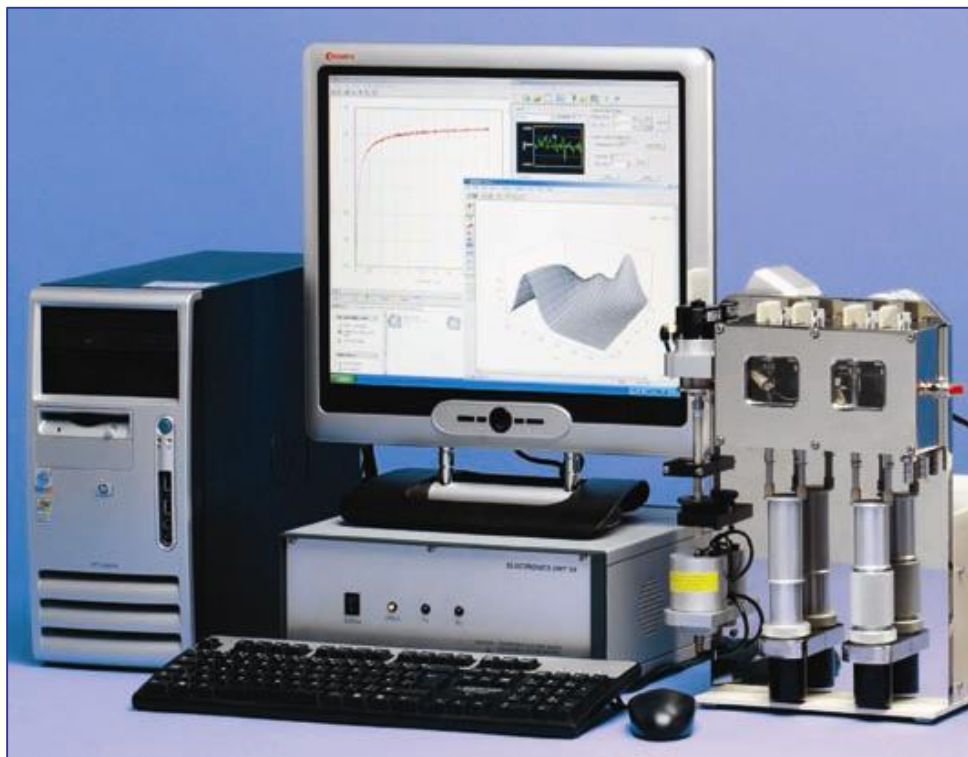


SX Series Pro-Data Windows™ Software and Electronics Upgrade

The SX20 stopped-flow reaction analyser launched in December 2005 features the all-new Pro-Data instrument control and data acquisition system running under Windows™XP. Pro-Data is now available for modernising the operation and functionality of existing Applied Photophysics stopped-flow systems.



Pro-Data will transform the performance of your SX spectrometer with:

- All-new rack-mounted modular electronics
- Powerful network-ready PC with 17-inch flat-screen LCD
- All-new software running under Windows™XP
- Dual-channel detection as standard
- Spectrakinetic, multi-wavelength stopped-flow acquisition as standard
- Pro-K for PC software is provided for global analysis of wavelength dependent kinetic data
- Pro-KII trial software is provided for advanced global analysis
- Full refurbishment of the sample-handling unit (SHU)
- Free software upgrades on request for the lifetime of the instrument
- Comprehensive 12-month warranty on the upgrade

Pro-Data Hardware Upgrade

The Pro-Data upgrade involves replacement of the control electronics in the sample handling unit, monochromator, detectors and photometric control unit with a single Electronics Unit. This fully modular, electronics rack contains a number of plug-in modules that provide the communication, control and data acquisition elements of the stopped-flow instrument. The electronics architecture used on the SX instrument is the same as that used on the Applied Photophysics PiStar CD stopped-flow and Chirascan CD instruments. The RISC PC is replaced with a powerful network-ready PC running Windows™ XP Professional with a 17" flat screen monitor.

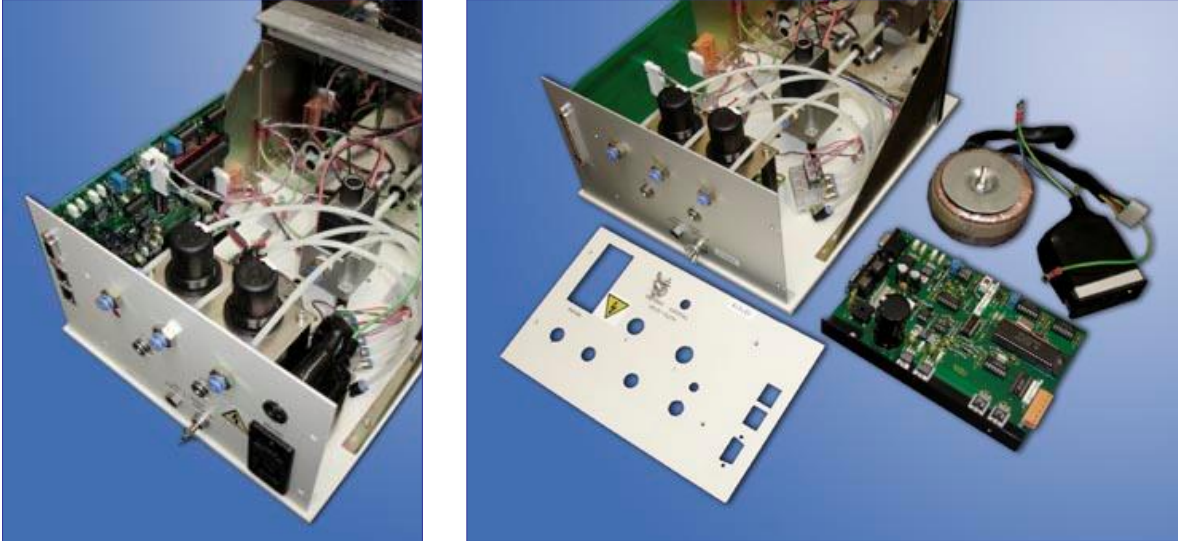


The new electronics provides the following significant benefits:

- Much improved speed and responsiveness of instrument control
- New high-accuracy 16-bit A/D conversion for all channels with automatic gain control for maximum signal resolution without requirement for manual gain offset adjustment
- High-speed over-sampling for optimal signal smoothing without resorting to analogue filters and potential signal distortion
- Simultaneous dual-channel data acquisition capability as standard
- Smaller, fully modular, rack-mounted electronics for simpler servicing and upgrading
- Latest surface mount technology and digital signal processing for enhanced reliability and performance. Firmware updates can be downloaded from the PC
- Hardware compatibility with Applied Photophysics PiStar and Chirascan CD instruments
- Vacant slots provide capacity for future expansion
- Full compatibility with future SX instrument developments
- Simpler, neater cabling

Sample Handling Unit Upgrade

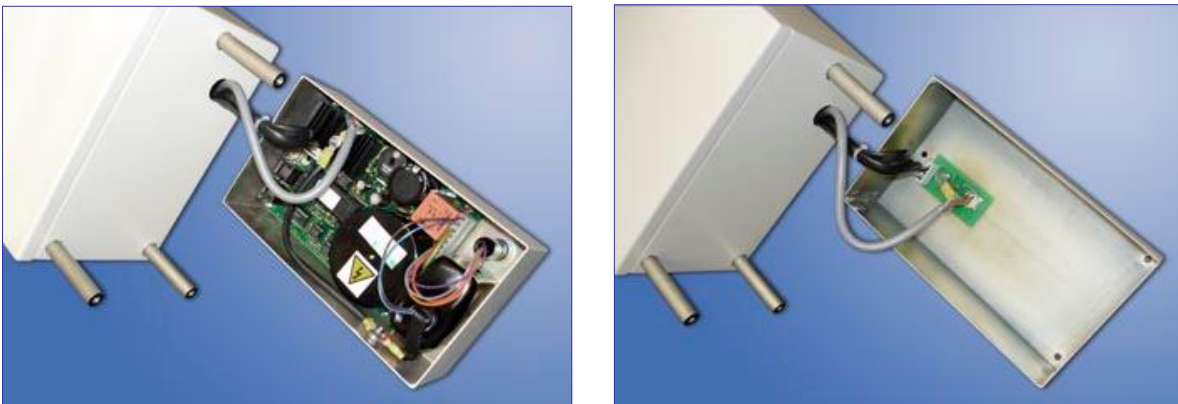
The sample handling unit (SHU) undergoes upgrading with the removal of the old SHU control card and mains power transformer (the Electronics Unit powers the SHU and monochromator following the upgrade). The SHU is fitted with an upgrade adaptor board connected to the internal wiring of the SHU and a replacement backplate to accommodate the new, simpler external cabling (one cable replaces four). The new SHU control is via the Electronics Unit.



Before and after pictures of the sample handling unit upgrade

Monochromator Upgrade

The monochromator control electronics housing is replaced with an upgrade housing that contains an upgrade adaptor board connected to the motor control wiring of the monochromator. The new monochromator control is via the Electronics Unit.



Before and after pictures of the monochromator upgrade

Absorbance and Fluorescence Detector Upgrade

The absorbance and fluorescence photomultiplier detectors are fitted with electronic mounts as part of the upgrade. The existing photomultiplier tube is refitted to the new electronic mounts and vibration-proof foam fitted to the housing. The external cabling is simplified with a single cable connected to each detector in place of the two existing cables. Instruments dating from pre-1996 will benefit from amplified signal detection following the upgrade.



Before and after pictures of the Absorbance and Fluorescence detectors

Photometric Control Unit Upgrade

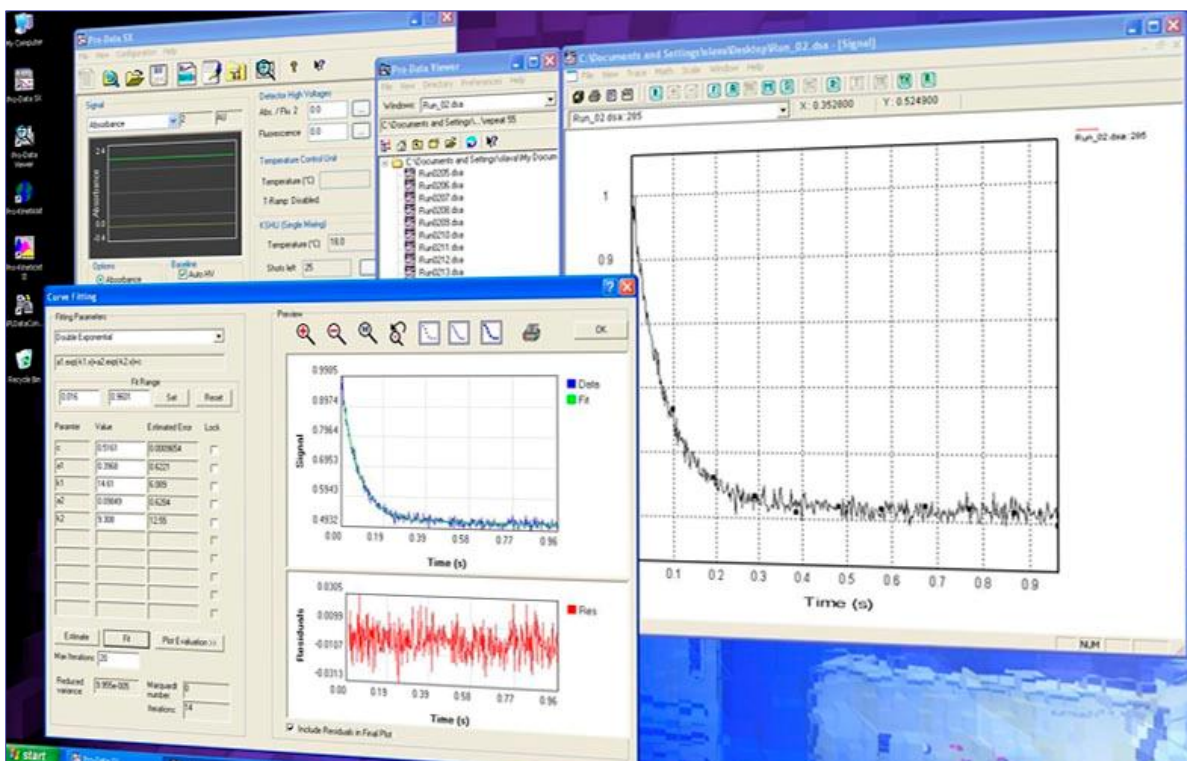
The photometric control unit(s) is redundant following the upgrade. Control of the absorbance and fluorescence detectors is via the PMT module housed in the Electronics Unit. The dual channel PMT module provides simultaneous signal detection on two channels simultaneously. This provides significant benefits for systems previously equipped with only one photometric unit and ensures that any future upgrade to dual fluorescence or fluorescence polarisation would be significantly more cost effective.

Accessory Unit Upgrades

Instruments equipped with the photodiode array accessory and circular dichroism accessory undergo addition upgrade work to provide compatibility with the new electronics system. In each case, an additional module is fitted to the Electronics Unit and the relevant detector electronics are upgraded.

Pro-Data Software Upgrade

The Pro-Data upgrade includes a PC installed with the new Pro-Data software suite to provide full control of the instrument and data acquisition, data display and analysis, global analysis and data conversion for export to third party software packages. The software is identical to that used on the new SX20 stopped-flow spectrometer and very similar to that used on the PiStar CD stopped-flow and Chirascan CD instruments. This provides the user with the assurance that the SX software evolves apace to its sister instruments and ensures that Pro-Data users are familiar with the operation of other Applied Photophysics instrumentation.



Example desktop display showing the Pro-Data SX and Pro-Data Viewer Software

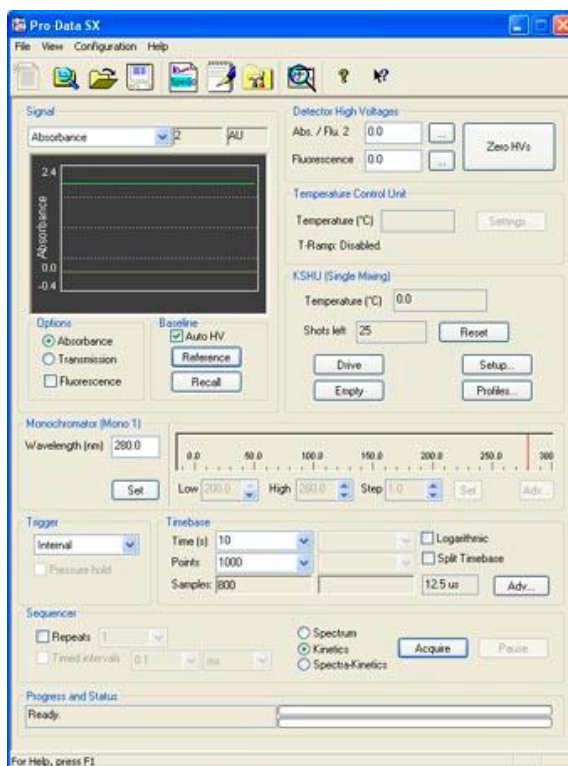
The following software is installed as part of the Pro-Data software upgrade:

- Pro-Data SX instrument control and data acquisition software
- Pro-Data Viewer data display and manipulation software
- Pro-Kineticist global analysis software
- Pro-KII second order global analysis software (trial version)
- Data Converter file conversion software

All software is pre-installed on the PC and supplied with a back-up CD. Free software updates are available on request for the lifetime of the SX system.

Pro-Data SX Software

The Pro-Data SX software features a control panel for user friendly control of the instrument and data acquisition. The interactive control panel adapts to the experimental mode and signal measurement to assist the user in experimental set-up. Experimental set-up is aided by wizards for more complex procedures and a new set-up template feature is introduced for rapid set-up of common measurement parameters.



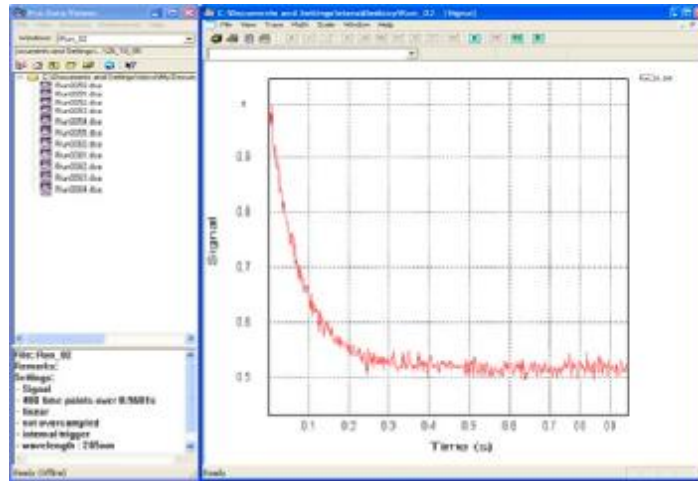
Pro-Data SX Control Panel Window

Pro-Data SX introduces the following new features to your SX stopped-flow spectrometer:

- More flexible data acquisition modes
- SK.1 Spectra-Kinetic, time-resolved multi-wavelength acquisition as standard
- Faster scanning capability
- Dual channel detection as standard
- Versatile oversampling and timescale options
- Logarithmic data acquisition over a wide range of timescales
- Integrated PDA detection mode replaces the old XScan software
- Faster PDA scanning: up to 1000 spectra per second
- Extensive instrument self-test and diagnostic tools
- Emulator mode provides off-line familiarisation with the instrument
- Online help

Pro-Data Viewer Software

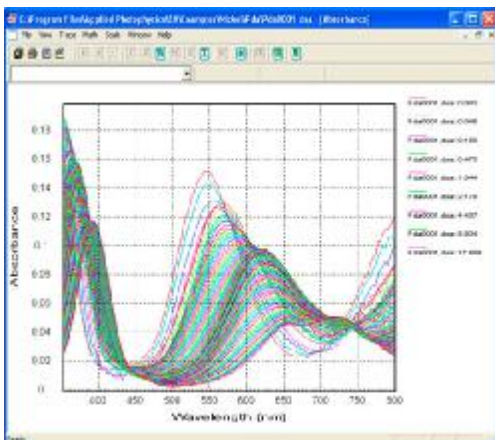
The Pro-Data Viewer software provides full data handling, display and analysis tools for steady state and kinetic data collected on the SX. The standard Viewer display format comprises a Windows™-style directory browser window and the main data display window. The Viewer is launched following initiation of data acquisition in the Pro-Data SX control panel or may be run independently for post-acquisition analysis.



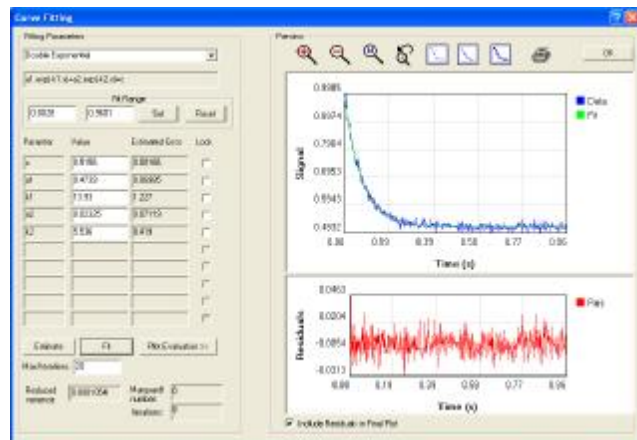
Pro-Data Viewer Directory Viewer Window and Data Display Window

Pro-Data Viewer features the following benefits for your SX stopped-flow data:

- Simpler Windows™ filing controls via the directory browser and associated toolbar icons
- May be installed on multiple PCs for remote data inspection and processing
- Dedicated curve fitting window with improved functionality and ease of use
- Simpler display of multivariate data sets
- Fully compatible with existing RISC OS data files



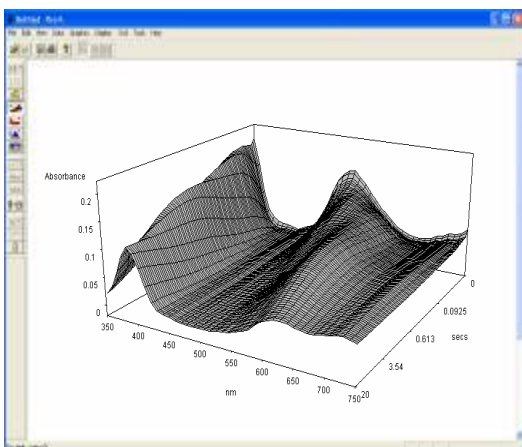
PDA Spectrum Display



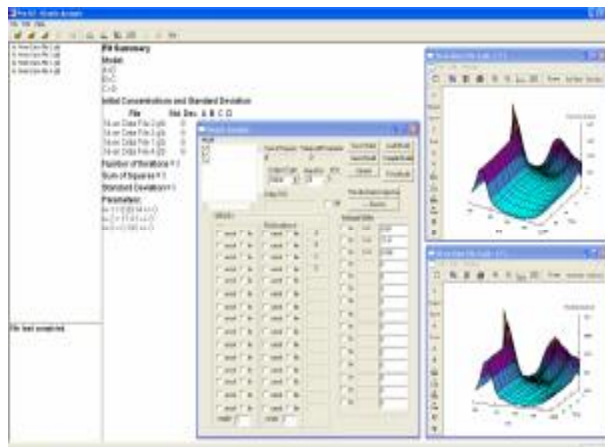
Curve Fitting Window

Pro-Kineticist Global Analysis Software

Pro-K for PC is designed for global analysis of first order multivariate data sets and is installed as standard for global analysis applications as part of the Pro-Data upgrade. The PC version of Pro-K offers much faster data processing compared to the RISC version installed as an optional extra on existing RISC OS instruments.



Pro-K for PC 3D Data Display



Pro-KII Example Screen Display

A trial version of Pro-KII is provided for global analysis of second order multivariate data sets, e.g. sets of concentration dependent, multi-wavelength data. Pro-KII retains the full functionality of Pro-K but also provides the user with fitting to more complex reaction mechanisms by enabling simultaneous fitting of multiple data sets in time, wavelength and concentration domains.

APL Data Converter Software

The APL Data Converter is provided to generate data files for export to 3rd party software applications. The data converter rapidly converts a single file or batch of files to comma or tab separated columns of data and retains all appended text with the data. The Data Converter is fully compatible with old RISC OS data files.



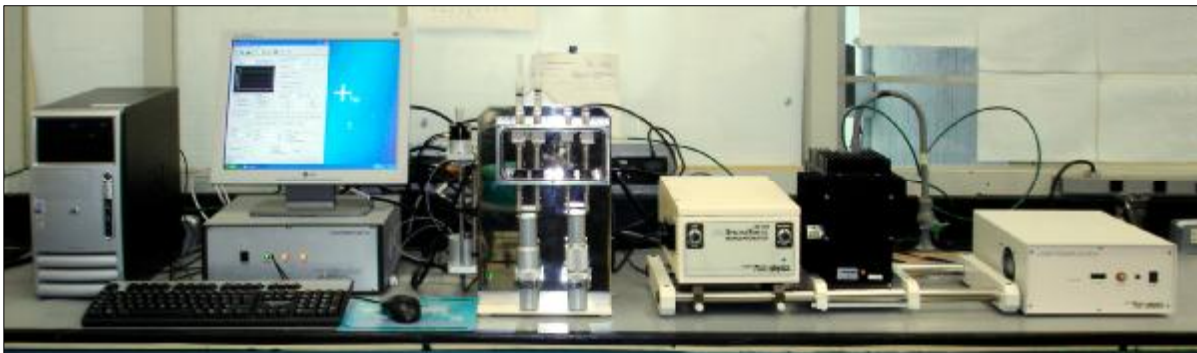
APL Data Converter Window

Example Pro-Data Upgrade

The following example of a 1991 DX.17MV demonstrates what can be achieved with the Pro-Data Upgrade. This instrument had been in regular use since its installation but was in urgent need of servicing and modernisation:



The monochromator, SHU and detectors have been upgraded as described in this brochure and the new Electronics Unit and PC fitted. This customer *also* decided to upgrade the light source with the new combined power supply-igniter unit and a new xenon lamp housing to bring the system in line with the latest SX20 specifications:



The SHU service is carried out to the same high standard as a regular service visit and transforms the appearance and performance of even the oldest instruments:



Pro-Data Upgrade Installation and Service Visit

The Pro-Data SX upgrade requires a two day visit from an Applied Photophysics engineer. During the visit, the following tasks will be completed as standard:

- The existing electronic hardware will be replaced with the new Pro-Data Electronics Unit, associated hardware and cabling as described earlier in this brochure.
- The RISC PC will be replaced with the new PC running Windows™XP Professional and the new suite of Pro-Data SX software.
- The stopped-flow consumable components of the SHU will be replaced according to the standard SX preventative maintenance service procedure.
- The instrument optics will be aligned and recalibrated if necessary.
- One half day training session will be available for introducing users to the new software and instrument features.
- All obsolete electronics will be removed from the site.

In addition to the standard tasks, the visit may also be used to install any optional accessories or to service the optical elements of the system.

The visit price will be identical to that of the Gold Level of the Service Level Agreement programme operated by Applied Photophysics and entitles the customer to the following benefits and cover for the instrument:

- Priority technical support service
- Priority repair service (plus no minimum repair charge)
- 20% discount on consumable items
- 10% discount on upgrade accessories
- One one-day preventative maintenance visit plus spares kit

In addition to these benefits, the following additional benefits will apply for the Pro-Data SX Upgrade:

- One additional day on site from the engineer to install the upgrade
- 12 month warranty on all work carried out on the SX instrument during the visit

The Pro-Data upgrade is compatible with all Applied Photophysics DX and SX Series stopped-flow instruments supplied since 1990. For further details about the upgrade, please contact the Technical Support Department at Applied Photophysics.