

## ZodiaC

# Zeiss Optical Dissolution In-situ Analysis and Control

### INTRODUCTION

The use of fibre optic probes in dissolution monitoring in analytical development and new product formulation testing in pharmaceutical analysis is a relatively new technique and offers positive benefits to the industry. Zeiss has been at the forefront of this development for a number of years using its state of the art diode array detection system which is designed and optimised for fibre optics – The MCS 500 series.

In-situ analysis using fibre optic (F/O) probes avoids the problems associated with an extractive system such blockage of tubing and filters. Also adsorption and precipitation on filters and Teflon tubes can lead lower concentrations. The time consuming process of calibration of flow and pumps is totally avoided by the use of F/O probes. There is no dilution error as no media is removed and shorter time points are possible for accurate profiling when compared to manual and most automated methods.

Zeiss together with Zymark Ltd, England developed a fully automated robotic system utilising a single F/O probe linked to the Zeiss MCS Diode Array Spectrometer in 1996. Several systems have been installed since then and have been successful in operation.

A new development from Zeiss is the ZodiaC. This uses multiple F/O probes for multi-channel analysis with the proven MCS spectrometer coupled to an 8 channel multiplexer. Initially targeted for sustained release products with dissolution profiles of 24-48 hours, the system can also be used for fast release products. The system can measure time points of a minimum of 1 minute due to the use of a fast and precise multiplexer with a proven reliability record in the telecommunications industry. Dicon and Zeiss have optimised it for UV-VIS operation.



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## THE Z-DIS-MUX SOFTWARE

- LabView programme under NT linked to client network for data storage and printout of reports
- Security access and password protected
- Validation screen for testing and checking status of Vankel, Dicon and MCS hardware
- Automatic and manual operation
- All measurements and report generation are automatic freeing operator for other tasks
- Automatic Interchannel Calibration with bubble detection

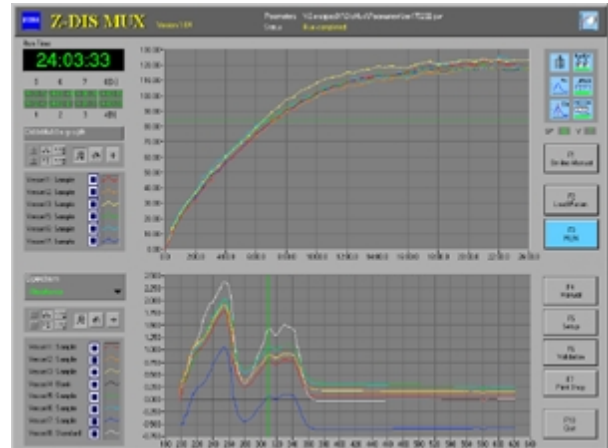
## OPERATION

- Vankel bath prepared for paddles or baskets
- Vessels manually filled with media
- All probes lowered for Interchannel Calibration
- System suitability check using positions 4 and 8
- Standard in vessel 4 and with blank solution in 8
- System ready to run
- Total time for above is about 30min

## SPECIFICATIONS

- MCS 551 UV, range 200 – 620nm, resolution 0.8nm/pixel
- Photometric accuracy for all channels - +/- 0.01Au
- Wavelength accuracy for all channels - <0.3nm
- Stray light at 240nm <0.1%T
- Noise - <0.0005 Au RMS
- Drift - 0.0004 Au/hr
- Channel switching time - < 3 seconds
- Typical measuring time per channel, based on 10 coadds of spectra < 3 seconds

Real time display of profiles and spectra



Paddle shaft, F/O probe and Temperature sensor



Patented Diode Array - MCS sensor

