KEY WORDS: Living cells, confocal, resonant scanning, deconvolution, 4D-imaging,

1. REALLY CONFOCAL – ANY SPEED: TCS SP5
High speed confocal imaging so far was always compromising sectioning performance versus speed. Employment of resonant scanning devices not only allows 16 kHz time resolution at line-mode, but also proves to give better signal to noise and lower photobleaching. This is contrary to all predictions. Data and explanation will be presented.

2. HOW TO CONTROL LIVING SAMPLES: LAS AF
A major time-issue in imaging facilities is software control. The new platform LAS AF for imaging systems, which spans the whole application range in advanced fluorescence introduces new concepts and addresses experiment- and learning time.

3. SPECTRAL CONFOCAL – A NEW APPROACH: TCS SPE
Various concepts have been presented in the past for spectral emission control, also on dedicated microscope systems. A new design for spectral imaging, dedicated for routine experiments in research laboratories is presented.

4. FAST IMAGING WITH EXCITATION MONOCHROMATOR: AF6000LX
Fast excitation changes at any wavelength within the visible range allow ratio imaging and sequential excitation with any illumination pattern. This concept in conjunction with deconvolution has a very powerful potential in life cell imaging. Concepts and data are presented.

5. SPECTRAL FLUORESCENCE LIFE TIME IMAGING: SP-FLIM
A new dimension in application of life time imaging is available by combination of spectral detection with the SP® detector and life time imaging equipment. Correlation measurements wavelength versus life time become available. Technical realization will be presented and data will be discussed.