**AFTER**

Optical Coherence Tomography (OCT) is a non-invasive research procedure for investigating the inner structure of various objects using optical emission. The method is based on low-coherence interferometry (LCI). OCT has a high spatial resolution capability (several micrometers). However, the probing depth is reduced to several millimeters due to the dispersion of optical emission inside biological tissues. The first results of using OCT *in vivo* were obtained in 1993. Since then, the technical design of the method has been continuously improved to increase the probing depth, spatial resolution and scanning speed.

OCT unit is primarily based on the Michelson interferometer (Fig. 1). The optical emission produced by the source is split into two parts. One part is directed towards the interferometer reference arm that has a moving mirror. The second part is directed toward the object arm where a sample is located.

Once a beam in the object arm is reflected from the optical inhomogeneities of the sample and the other beam from a reference mirror, the two beams are brought together again and are directed toward the detector.

The spatial resolution of OCT systems finds extremely small blood vessels (several microns in size) and obtains blood flow velocity data by evaluating the Doppler shift of the interference signal.

The OCT method of obtaining flow velocity data is known as Doppler Optical Coherence Tomography (DOCT).

DOCT is an extension of OCT and uses the same equipment as typical OCT measurements. The main advantage of DOCT compared with other flow visualization methods that are based on optical emission is that those methods are either invasive (fluorescent angiography) or have poor depth resolution (laser Doppler flowmetry, laser speckle flowmetry).

In modern DOCT systems, the accurate determination of the Doppler angle is usually a difficult task.