

monitoring of cerebral dynamics during artificial ischemic induction. The results we present show high sensitivity to reflectance changes while using laser sources for illumination. Rapidly switching between a highly coherent illumination scheme and a reduced coherence scheme allows us to simultaneously make measurements of oxygenation and blood flow *in vivo*. These values agree well with other recent studies of the same phenomena. Using coherent and incoherent illumination in a combined technique leads to several advantages: baseline flow values in a few vessels can be obtained using erythrocyte tracking with low noise SW illumination. This is used to calibrate later LSCI measurements within the long exposure limit. The combined data obtained using the two techniques simultaneously can be used to effectively classify veins and arteries in rodent cortex. Future work includes integration of miniaturized components for the purpose of developing portable monitoring of cortical hemodynamics. We see important applications in the study of stroke, epilepsy, and cancer.

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