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**Deadline for abstract submission: April15st, 2018**.

**Measurement of transcutaneous oxygen saturation in human tissue using a modified Lübbers transformation function method.**

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**Abstract:** An important contribution to the measurement of blood oxygenation (1-3) was made almost 40 years ago by Lübbers et al (4-6),he devised a method to compare the spectra measured after the reflection of light from the skin against that of fully oxygenated hemoglobin solution, leading to a transformation function that considers the impact of the scattering effect in human tissue.

In this work, this transformation function was modified by revisiting Lübbers’s approach. We similarly compared reflection spectra in reflection mode and using principal component analysis, established the main parameters involved in the scattering effect. This enabled us to overcome the scattering effect and predict the transcutaneous oxygen saturation in human tissue.

Our new model uses a multi-wavelength approach (450nm to 1000nm). A set of potential spectra signatures were created using Monte Carlo simulations (7) and compared in the optimization process with signals from light backscattered from tissue obtained experimentally, using a fixed source-detector separation distance. The model obtained will be used to create a tissue oximeter which uniquely does not require the calibration that often limits measurement of blood gases at the point-of-care.

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