**Raman spectroscopic investigation of blood components for probing hematological diseases**

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Researchers have been employing various spectroscopic technologies for the exploration of red blood cell (RBC) as well as blood plasma/serum properties to identify various mechanisms, since it can ultimately improve the way we look at various hematological disorders. Spectroscopic tool and in particular Raman spectroscopy has been always in forefront for more than four decades for blood related research explorations. The low scattering cross-section of water molecules, minimal sample preparation steps and the absence of foreign labelling agents makes this technique more acceptable for assessing biological samples. This technique can be used for species identification, as well as to extract detail regarding the environment where it resides. The present pilot study investigates the changes in the blood plasma of polycythemia patients using a custom built Micro-Raman spectroscopic setup. A decrease in the intensity for the bands present at 1150 cm-1 and 1521 cm-1 were evident in the polycythemia samples in comparison with the control. These can be attributed to the changes occurring with Beta-Carotene in blood. Further detailed investigations are required in order to corroborate the all the Raman spectral changes with the underlying mechanism within the polycythemia blood. The outcome of this preliminary research work can lead to the development of spectroscopic tools that will aid in the monitoring of biochemical changes and detailed understanding of polycythemia.