Micro-Raman spectroscopy of natural and synthetic ferritins and their mimetics

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Micro-Raman spectroscopy (μ-RS) is known to be powerful tool in investigation of biological tissues. Of particular intrest is the search for methods allowing detection of different form of iron inside ferritin protein both *in vitro* and *in vivo*. In this study we propose to use μ-RS as potential tool to distinguish between the forms of iron present in human organs especially in brain tissues. Using a inVia Renishaw micro-Raman spectrometer systematic studies of biogenic ferritin (horse spleen), synthetic ferritin with magnetic core (magnetoferritin) and their mimetics were performed. As model ferrihydrite-like mineral and nanoscale magnetite parenteral iron formulation Venofer and Endorem were used respectively. The ability of μ-RS to discrimination between ferritin and magnetoferritin was demonstrated. The results are promising for further studies of brain tissues among other typical magnetic techniques used currently.