

FT-Raman spectroscopic analysis of enhanced activity of supercritical carbon dioxide treated bacterial alpha-amylase

OBJETIVE

Employ FT-Raman spectroscopy to study changes in the water associated with the activity enhanced enzyme. This would allow confirmation of enhanced specific activity of the bacterial α -amylase, post SC-CO₂ treatment.

SAMPLE PREPARATION

Three sets of 2 mg sample of lyophilized α -amylase were subjected to SC-CO₂ treatment. Four samples of α -amylase (control and three samples treated under SC-CO₂ conditions) were subjected to FT-Raman analysis.

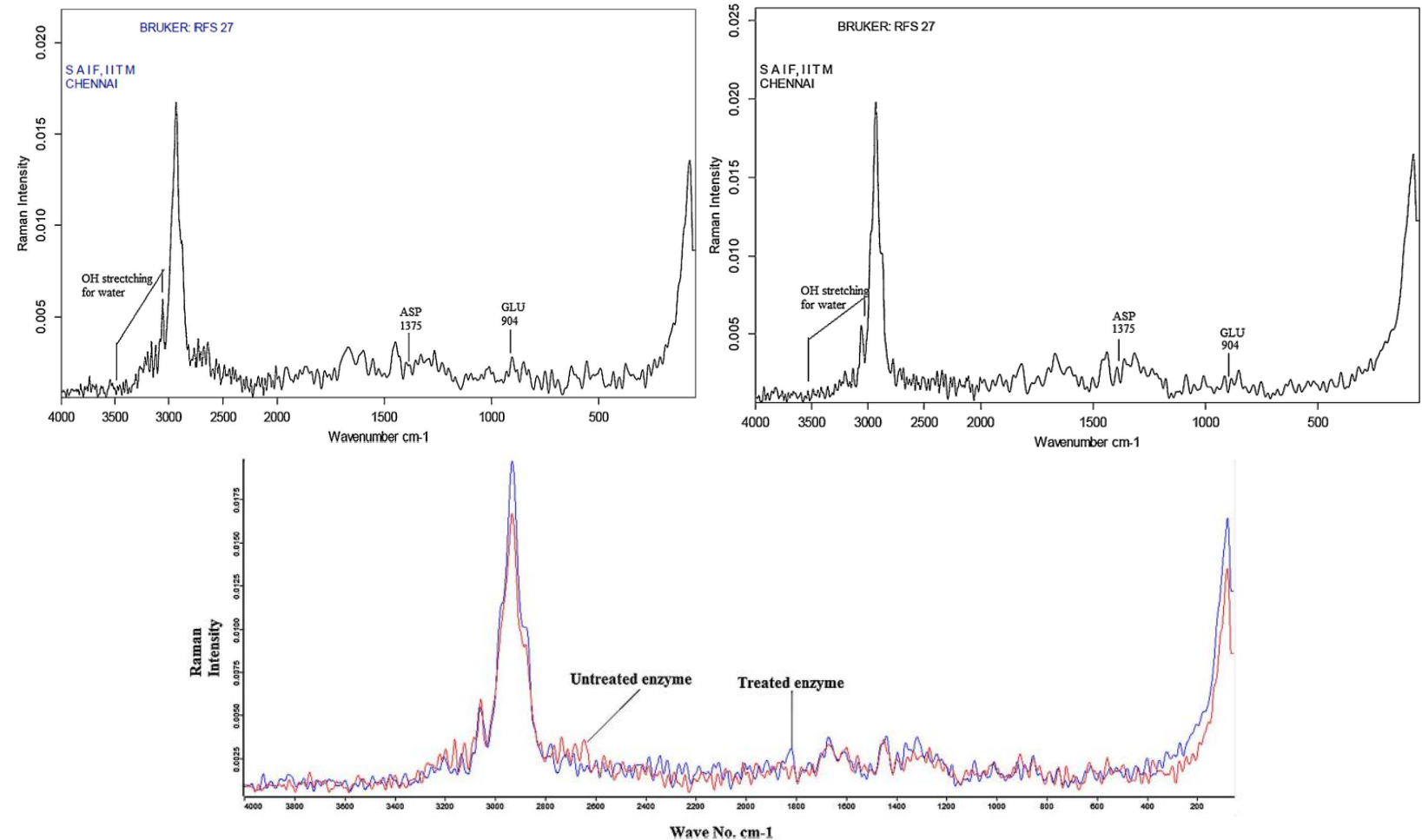
DATA ACQUISITION

The spectra were collected using a Bruker RFS 27 spectrometer emitting at a wavelength of 1064 nm. Laser power was approximately 1000 mW for solid samples. The spectra obtained were averages of 100 scans at 2 cm⁻¹ resolution over the range of 4000–500 cm⁻¹.

CONCLUSION

FT-Raman spectroscopy therefore confirmed enhancement of activity of the bacterial α -amylase by supercritical carbon dioxide processing.

REPRESENTATIVE FIGURE AND RESULT



REFERENCE

Y. Wei et al, "Green synthesis of Fe nanoparticles using Citrus maxima peels aqueous extracts," *Material Letters*, vol. 185, pp. 384 – 386, 2016.