

# CYTOCHROME C COMPRESSIBILITY DETERMINED WITH TWO SYNCHROTRON-BASED TECHNIQUE

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## INTRODUCTION

Compressibility is an important quantity for characterizing the three inter-connecting properties of a protein: dynamics, structure and function.

## RESULTS

In the case of the electron-carrying protein cytochrome c, the compressibility values previously reported vary considerably (0-0.17 1/GPa). We measured the adiabatic compressibility of this protein with two synchrotron-based experiments, nuclear resonance vibrational spectroscopy (NRVS) and inelastic X-ray scattering (IXS). Unlike other techniques, this unique experimental approach probes the protein globally, at ambient pressure, does not require the separation of protein and solvent contributions to the total compressibility, and uses samples that contain the heme iron, as in the native state.

## CONCLUSIONS

From the adiabatic compressibility and known protein parameters we estimated the isothermal compressibility. Its value, 0.116 1/GPa, is in very good agreement with a recent molecular dynamics simulation.