Protein Thermal Denaturation of Beef Muscle: Neutron Imaging and spectroscopies
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**Context of Project**

Open Food System is an academic and industrial project with the purpose to follow meat cooking without any intrusion. It concerns two main parts:

1. **Sensor Development**
   - a) Spectroscopic Sensor
     - Visible / InfraRed
     - Fluorescence
   - b) Olfactometer Sensor

2. **Biochemistry of Muscle Cooking**

**Neutron Imaging during Cooking**

Neutron Imaging was used to follow muscle morphology changes (protein contraction) and juice migration inside the sample (through the evolution of Attenuation Coefficient).

**Spectroscopies: IR and Fluorescence**

InfraRed and Fluorescence were carried out on muscle samples with the purpose to detect the spectroscopic signature of proteins at a particular cooking degree.

**Future**

Microscopic Scale on Neutron Imaging:
- Coupling Neutron Imaging with Surface Spectroscopies (IR and Fluorescence) during heating Process

Molecular Scale:
- Myosin Thermal Denaturation depending on ionic strength (KCl)
- Structural Studies by IR, Fluorescence and SANS spectroscopy

**References:**
Chen et al., 322 (5907), 1494-1497 (Science)