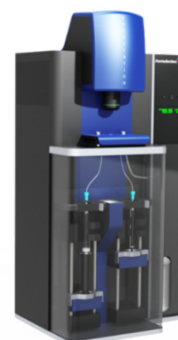
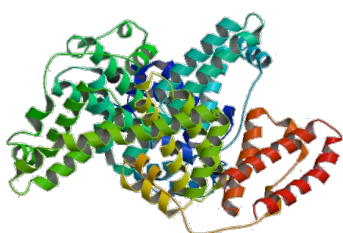


# Protein solutions viscosity using microfluidic rheometer



## Introduction

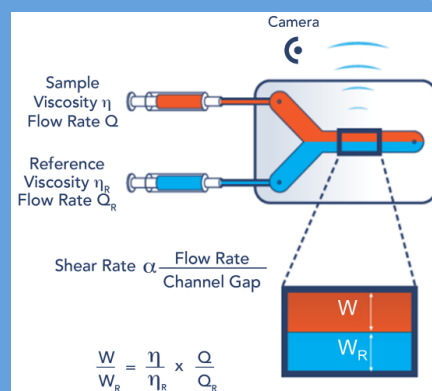
Protein solutions of higher and higher concentrations are gaining the interest within the biopharmaceutical industry as new forms of drug delivery systems are being studied. That concentration will impact the viscosity of a protein solution depending on its inherent aspect: mass, volume, shape, and ability to deform.



Bovine serum albumin, the protein of choice for this note, is one of the most studied proteins. It is the main protein of plasma with a typical concentration of 50mg/ml. The viscosity of BSA solutions has been reported to increase linearly with concentration in diluted solutions (below 100mg/ml) and exponentially at higher concentrations.

## Reminder on the technique

FLUIDICAM RHEO uses a co-flow microfluidic principle to measure viscosity of various products. A sample and viscosity standard are introduced together in the microfluidic channel (typically 2.2mm X 150µm) where they undergo strong confinement. Applied shear rate is simply adjusted by a computer-controlled syringe pump. Under these conditions, the interface position is related to the viscosity ratio between the sample and the reference. Images of the resulting laminar flow are acquired thanks to an integrated camera and the viscosity of the sample is automatically extracted as a function of shear rate and plotted directly in the software giving a resulting rheological curve.



## Experimental results

Viscosity of bovine serum albumin (BSA) in water has been studied with FLUIDICAM RHEO at different concentrations (from 25 to 250mg/ml) at 25°C.

