

Relaxation Measurements with Flow

The **Acorn Flow** enables you to make measurements on concentrated suspensions using an external circulation system to pump the sample into the measuring device. This provides the user with an additional dimension to explore sample behavior in response to some external input, such as the addition of a polymer or surfactant, milling the suspension, monitoring a reaction, etc.

Historically, investigators have performed measurements by stopping flow to make measurements. Because of the unique design of the Acorn Flow magnets, it is possible to perform measurements while the sample is flowing. Table 1 below summarizes the change in relaxation time of XiGo's verification liquid, a solution of copper sulphate with a relaxation time of about 35ms without flow. Figure 2 shows a sample Relaxation result for a flowrate of 1 ml/s. We observe a significant decrease in the relaxation time as a function of flowrate. However, changing the flowrate an order of magnitude only results in a decrease in the relaxation time of about 25%. It is possible to add this capability to the Acorn Area by installing the **Flow Option**.

Table 1 Relaxation Time Versus Flowrate

Flowrate ml/s	T2[ms]
0	34.8
0.125	27.8
0.5	25.1
1	23.4
2	21.2

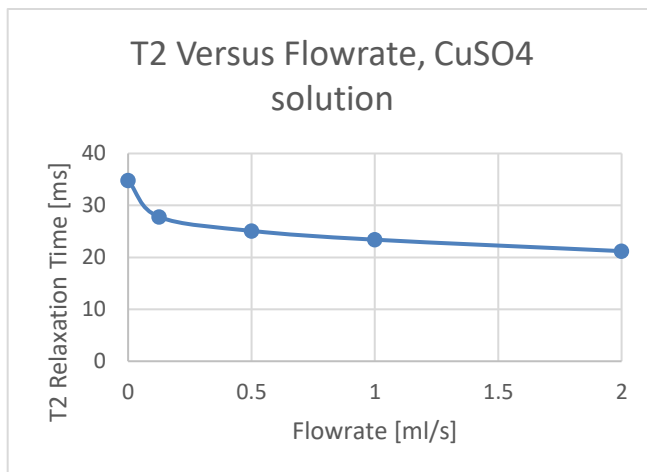
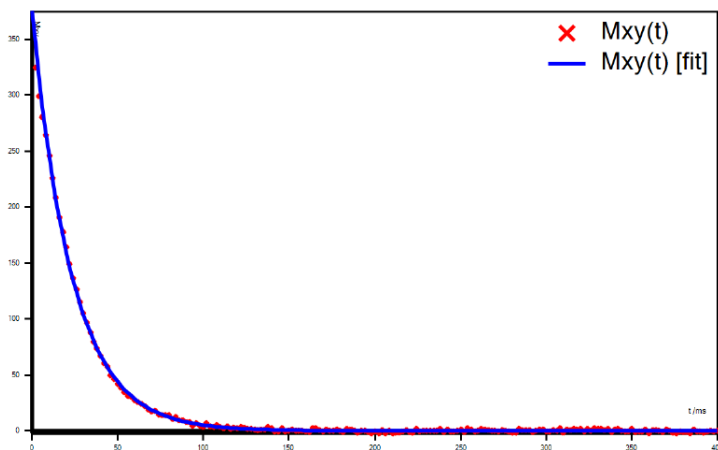


Figure 1 T2 Versus Flowrate

Figure 2 T2 Relaxation With 1 ml/s Flow



Mxy fit for T₂ measurement