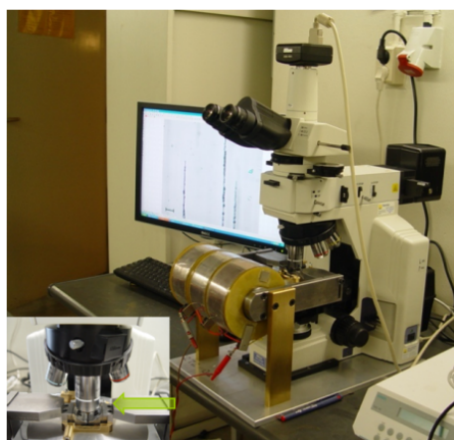


**Electronic Supplementary Information to:**  
**Conformational changes of a single magnetic particle string within gels**

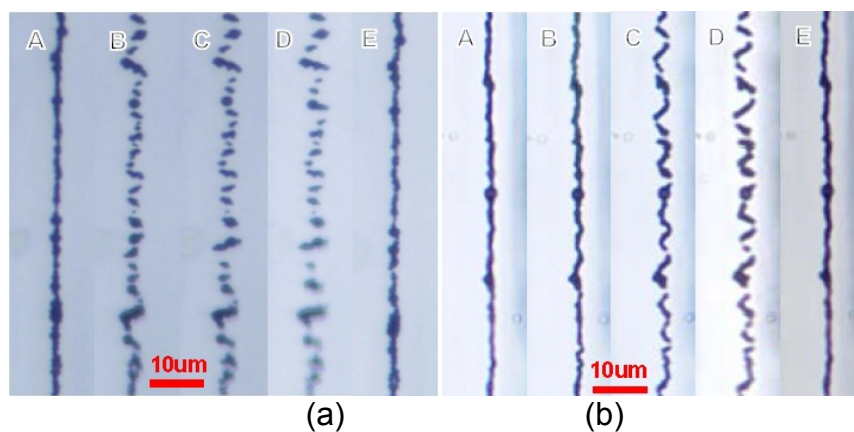
Hai-Ning An, Jan Groenewold, S. J. Picken and Eduardo Mendes



**Figure 14.** Homemade magneto shear cell mounted on the microscope.

A homemade magneto shear cell was mounted on a microscopic (Nikon, Model, Eclipse E600Wpol). Magnetic fields up to 800 mT is generated by an electromagnet, which is composed by three customized solenoid coils (each one has a turn over number = 2000) connected with a DC power supply and a soft iron bar to enhance and guide the magnetic field parallel to the microscopic stage.

The magnetic flux density can be applied as linear or stepwise. A Hall sensor (magnet-physik, FH 55) allows online measurements of the actual magnetic flux density.



**Figure 15.** Sequential images of string structure evolution of (a) 5 wt% and (b) 10 wt% SEBS gel under the action of the external magnetic field perpendicular to the initial string. A-E related to the different magnetic flux density. (A) initial state before the presence of the magnetic field; (B) in the presence of field 300 mT for 5 min; (C) 460 mT for 5 min; (D) 580 mT for 5 min; (E) 10 min after the removal of the magnetic field.



**Figure 16.** String structure evolution under the action of the stretch strain (37%) parallel to the string direction. a) stretching without field; b) stretching in the presence of the magnetic field 800 mT; C) stretching without the field, after the sample reach the desired strain(37%), the magnetic field (800 mT) applied for 5 min. The sequential images are shown in black and white to enhance contrast.