

Team Project #1 Report
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This video was taken for our first team project. Our group was trying to capture peak and valley formations in ferrofluid. This particular video shows the behavior of ferrofluid moving up a steel structure.

The basic flow is ferrofluid, magnetically charged, moving up a steel structure. The structure itself was about six inches high and was helix-like in shape. It sat in a shallow pan filled with about 1 cup of ferrofluid. The structure was connected via wire to a small electromagnetic generator. When the generator was turned on and current applied to the structure, the ferrofluid became magnetically charged and followed the electromagnetic flow up the structure. Ferrofluid is essentially composed of nano-sized iron particles suspended in oil. When ferrofluid is introduced to a powerful magnetic field it forms a steady pattern of high and low points. This phenomena is known as the normal field instability effect.¹ So as the ferrofluid flows up the structure due to its magnetic attraction, the pattern of peaks and valleys remains unchanged.

All of the materials used were provided by one of our team members who was doing his senior project on ferrofluid. The other members of his group and him were generous enough to let us have access to all of their materials for shooting. A Chimera 750kw light was used. The light also had a diffusing soft box attached to it, thereby diminishing the intensity but also scattering the light more evenly on the subject.

The size of the field of view is very small, probably about 3x3 in. The shot was taken looking nearly directly down at the subject at a ninety-degree angle. It was filmed with a Canon EOS 7D at 60fps and a resolution of 1080x720. The ISO was set to 800 and the f-stop was 2.8. The lens used was a Canon macro lens and had a focal length of 100-200mm. There were no post manipulations to this image. Being that it was shot at 60fps, when it is displayed at the standard 30(or 29.97)fps it plays at 50% speed. The sound was also slowed down to 50% to match the image.

The video does a good job of visualizing the normal field instability in ferrofluid. The patterning formation can be seen clearly as the ferrofluid moves up the structure. Though I feel that I did fulfill my intent, I could have definitely gotten better quality with the video. More light would have been nice in order to be able to open up the lens a little bit and get more depth of field. That said, I do like this video because of the shallow depth of field. The camera's focus attempts to follow the movement of the fluid and I think that gives the video added dimension. There are so many possibilities of interesting things that can be done with ferrofluid (at least visually). I plan on including it in some of my narrative work.

¹ <http://en.wikipedia.org/wiki/Ferrofluid>. Site visited on 3/28/12. Page last modified on 3/27/12.