

Materials List for:

# Remote Magnetic Actuation of Micrometric Probes for *in situ* 3D Mapping of Bacterial Biofilm Physical Properties

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URL: <https://www.jove.com/video/50857>

DOI: [doi:10.3791/50857](https://doi.org/10.3791/50857)

## Materials

Name	Company	Catalog Number	Comments
<b>Table 1: Reagents and cells</b>			
Magnetic particles	Life technologies	14307D	Micrometric magnetic particle, 2.8 µm diameter
Ampicillin (Antibiotic)	Sigma-Aldrich	A9518	
Tetracycline (Antibiotic)	Sigma-Aldrich	87128	
Bacterial strain MG1655gfpF	UGB, Institut Pasteur, France		Produces F pili at its surface, resistant to Ampicillin and tetracycline.
<b>Table 2: Capillaries and tubing</b>			
Filters for pediatric perfusion	Prodimed-Plastimed	6932002	
Hollow Square Capillaries	Composite Metal Scientific	8280-100	Manufactured in Borosilicate glass. Square 0.8 mm x 0.8 mm
Tubing silicone peroxyde	VWR international	228-0512	Diameter 1 mm
Tubing silicone peroxyde	VWR international	228-0700	Diameter 3 mm
<b>Table 3: Biofilm growth</b>			
Lysogeny Broth (LB) solution	Amresco-VWR	J106-10PK	Standard medium used to grow bacteria.
M63B1 solution	Home-made		Standard minimum medium used to grow bacteria.
Glucose	Sigma-Aldrich	G8270	Used to make M63B1 medium with 0.4% glucose.
<b>Table 4: Electronics</b>			
Camera EMCCD	Hamamatsu	C9100-02	
Heater controller	World precision instruments	300354	
Function generator	Agilent technologies	33210A	
Power amplifier	Home-made		It gives a current signal with amplitudes up to 4 A.
Syringe pumps	Kd Scientific	KDS-220	
Shutter	Vincent Associates	Uniblitz T132	
Magnetic tweezers	Home-made		Two electromagnetic poles, each made of a copper coil with 2,120 turns of 0.56 mm in diameter copper wire and soft magnetic alloy cores (Supra50-Arcelor Mittal, France) square shaped according to the blueprint shown in <b>Figure 10</b> . The two cores are mounted north pole facing south pole, in

			order to generate a magnetic force in one direction along the length of the capillary. See coil wiring details in <b>Figure 11</b> .
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**Table 5:** Optics

Inverted microscope	Nikon	TE-300	
S Fluor x40 Objective (NA 0.9, WD0.3)	Nikon		This a long working distance objective enabling observation of the biofilm in the depth.
Epifluorescence filters: 1) for green fluorescence: Exc 480/20 nm; DM 495; Em 510/20 2) for Red fluorescence: Exc 540/25 nm; DM 565; Em 605/55	Chroma	1)#49020 2)#31002	Particle displacement upon force application is recorded using the red fluorescncce filter block.

**Table 6:** Image analysis

ImageJ	NIH - particle tracker plugin		
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