

Materials List for:

# Studying DNA Looping by Single-Molecule FRET

Tung T. Le<sup>1</sup>, Harold D. Kim<sup>1</sup>

<sup>1</sup>School of Physics, Georgia Institute of Technology

Correspondence to: Harold D. Kim at [harold.kim@physics.gatech.edu](mailto:harold.kim@physics.gatech.edu)

URL: <https://www.jove.com/video/51667>

DOI: [doi:10.3791/51667](https://doi.org/10.3791/51667)

## Materials

Name	Company	Catalog Number	Comments
Small DNA FRAG Extract Kit-100PR	VWR	97060-558	
Acrylamide 40% solution 500 ml	VWR	97064-522	
Bis-acrylamide 2% (w/v) solution 500 ml	VWR	97063-948	
GeneRuler 100 bp DNA Ladder, 100-1,000 bp	Fermentas	SM0241	
Mini Vertical PAGE System	VWR	89032-300	
Syringe filter 0.2 µm CS50	VWR	A2666	
Trolox	Sigma-Aldrich	238813-1G	triplet state quencher
Protocatechuic acid (PCA)	Sigma-Aldrich	08992-50MG	oxygen scavenging system
Protocatechuate 3,4-Dioxygenase (PCD)	Sigma-Aldrich	P8279-25UN	oxygen scavenging system
mPEG-silane, MW 2,000 1 g	Laysan Bio	MPEG-SIL-2000-1g	
Biotin-PEG-Silane, MW 3,400	Laysan Bio	Biotin-PEG-SIL-3400-1g	
Avidin, NeutrAvidin Biotin-binding Protein	Invitrogen	A2666	
Phusion Hot Start High-Fidelity DNA Polymerase	New England Biolabs	F-540L	
Gel/PCR DNA Fragments Extraction Kit	IBI Scientific	IB47020	
Premium plain glass microscope slides	Fisher Scientific	12-544-1	
VWR micro cover glass, rectangular, no. 1	VWR	48404-456	
Fisher Scientific Isotemp 1006S Recirculating Chiller/Heater	Fisher Scientific		temperature control
Objective Cooling Collar	Biopetechs	150303	temperature control
KMI53 Biological Micrometer Measuring Stage	Semprex	KMI53	
High Performance DPSS Laser 532 nm 50 mW	Edmund optics	NT66-968	Cy3 excitation
CUBE Fiber Pigtailed 640 nm, 30 mW, Fiber, FC/APC Connector	Coherent	1139604	Cy5 excitation
650 nm BrightLine Dichroic Beamsplitter	Semrock	FF650-Di01-25x36	splitting dichroic
LaserMUX Beam Combiner, reflects 514.5, 532, & 543.5 nm lasers, 25 mm	Semrock	LM01-552-25	combining dichroic
Brightline Fluorescence Filter 593/40	Semrock	FF01-593/40-25	Cy3 emission filter

635 nm EdgeBasic LWP longpass Filter, 25 mm	Semrock	BLP01-635R-25	Cy5 emission filter
EMCCD iXon+	Andor Technology	DU-897E-CS0-#BV	
IX51 inverted microscope frame	Olympus		
Objective UApo N 100X/1.49 Oil TIRF	Olympus		
Immersion oil type-F for fluorescence microscopy	Olympus	IMMOIL-F30CC	
2 mm Diameter 45° Rod Lens Aluminum Coated	Edmund optics	54-092	miniature mirror
1/4" Travel Single-Axis Translation Stage	Thorlabs	MS-1	translation of miniature mirror
Ø1" Achromatic Doublet, ARC: 400-700 nm, f=200 mm	Thorlabs	AC254-200-A	focusing lens
Adjustable Mechanical Slit	Thorlabs	VA100	
Dielectric Mirror	Thorlabs	BB1-E02	
Ø1" Achromatic Doublet, f = 100 mm	Thorlabs	AC254-100-A	relay lens
Lens Mount for Ø1" Optics	Thorlabs	LMR1	
Dichroic Filter Mount	Thorlabs	FFM1	
Fixed Cage Cube Platform	Thorlabs	B3C	
Kinematic Mount for Ø1" Optics	Thorlabs	KM100	
N-BK7 Plano-Convex Lens, Ø1", f = 40 mm	Thorlabs	LA1422-A	collimating lens
N-BK7 Plano-Convex Lense, Ø6.0 mm, f = 15 mm	Thorlabs	LA1222-A	telescope lens
N-BK7 Plano-Convex Lense, Ø6.0 mm, f = 150 mm	Thorlabs	LA1433-A	telescope lens