

• Supplementary File •

Design and Experiment of Bio-inspired GER Fluid Damper

PU HuaYan¹, HUANG YiNing¹, SUN Yi^{1*}, WANG Min¹, YUAN ShuJin¹, KONG Zhen¹,
YANG PeiPei¹, CHU LiuFeng¹, WU JinBo², PENG Yan¹, XIE ShaoRong¹ & LUO Jun¹

¹*School of Mechatronics Engineering and Automation, Shanghai University, Shanghai 200444, China;*

²*School of Materials Science and Engineering, Shanghai University, Shanghai 200444, China*

Appendix A Parameters of the GER fluid damper

Table S1 Parameters of the GER fluid damper.

	Parameter	Symbol	Size	Material
Central Shaft Set	diameter	D_c	6mm	Stainless Steel
Positive Plate Electrode	outer diameter	D_{po}	46mm	Stainless Steel
Negative Plate Electrode	inner diameter	D_{ni}	17mm	Stainless Steel
Shell	outer diameter	D_{so}	110mm	Polyformaldehyde(POM)
Gap	gap of plate electrodes	g	3mm	
Total	height	H	86mm	

Appendix B Performance comparison

Table S2 Performance comparison.

ER damper	Effective area [mm^2]	Voltage [kV]	Max force [N]	Max Stress [kPa]
Peng[6]	314	1.0	8	25.48
Lee[7]	615.44	1.0	70	1.624
El Wahed[8]	2461.76	2.0	1	0.41
Ours	1369.5	3.0	120	87.62

* Corresponding author (email: yisun@shu.edu.cn)

Appendix C Dynamic mechanical properties test set-up

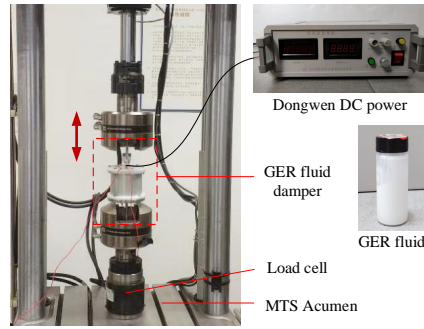


Figure S1 Dynamic mechanical properties test set-up.

Appendix D Mechanical properties vary with excitation condition

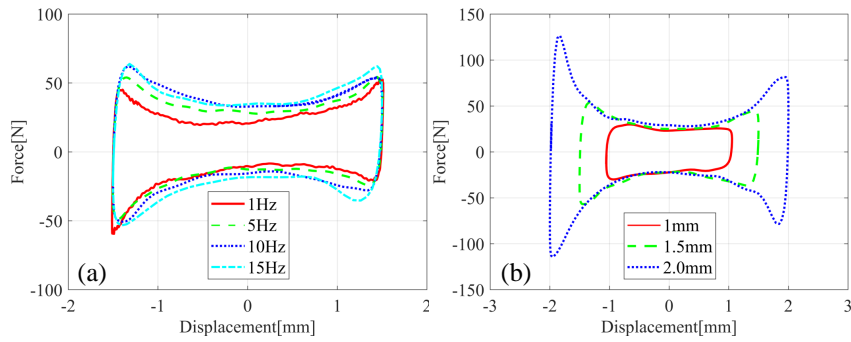


Figure S2 Mechanical properties vary with excitation condition: (a) Different excitation frequency; (b) Different excitation amplitude.