

Study for regulating flow fluctuation of peristaltic pump using a spherical elastic damper.

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ABSTRACT

Pricking a burst prevented water balloon, the extremely uniform laminar flow can be observed. Inspired by this fluid=structure interaction, we designed a spherical elastic tube with inlet and outlet, named soft damper, to reduce flow pulsation in industrial application. We tested the soft damper using peristaltic pump and found that the soft damper can remove 99.87% of flow pulsation. We also theoretically analyze the mechanism of the soft damper. We found that each soft damper has their own pressure section can extremely remove flow pulsation. To fabricate a suitable soft damper for the required pressure, pressure and volume diagrams according to various volume, hardness, and thickness were experimentally obtained.

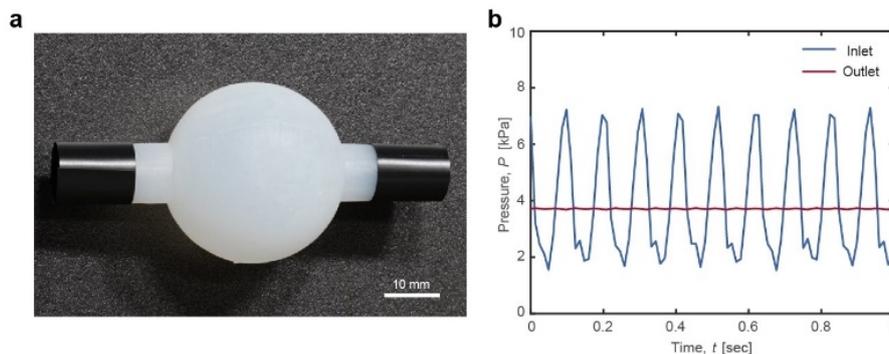


Fig. 1 (a) Soft damper. (b) Flow pulsation before and after passing the soft damper.

REFERENCES

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