Electronic Supplementary Material (ESI) for Lab on a Chip.

This document contains the figure captions for the supplementary videos supporting the article entitled, *Microfluidic Devices Powered by Integrated Elasto-Magnetic Pumps,* by Binsley et al. Both figures are slow motion videos, where the recordings are captured using a high speed camera operating at 1000 frames per second, played back at 25 frames per second. Therefore the footage shown here is 40x slower than real time.

Fig. S1 Pump motion. This figure is a slow motion video of the elasto-magnetic pump during actuation. The pump is actuated by a Helmholtz coil providing a sinusoidal magnetic driving field with an amplitude of 6 mT and a frequency of 50 Hz. The fluid which the pump is operating on is water. The non-reciprocal nature of the pump motion can be observed and is highlighted in Fig. 4.

Fig. S2 Fluid flow. This figure is a slow motion video of the fluid flow at the inlet to the pump module. The pump is actuated by a Helmholtz coil providing a sinusoidal magnetic driving field with an amplitude of 6 mT and a frequency of 50 Hz. The fluid which the pump is operating on is water. 15 µm diameter polystyrene beads are used to track the motion of the fluid. The beads can be seen to move to the left when the pump is performing the power stroke, and move to the right when the pump is performing the recovery stroke. Since the recovery stroke is less effective than the pump stroke, the beads are not returned to their original position over the course of one cycle, but instead a net fluid flow is observed and the beads move towards the left over the course of the video.