

Supporting Information for the article:

**Bidirectional particle transport and size selective sorting of Brownian particles in a flashing spatially periodic energy landscape**

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**SUPPORTING VIDEO FILES.**

With the article 2 video clips are included in support of Fig.1 and Fig. 4.

**VideoS1**(.WMV): This videoclip shows the controlled bidirectional transport of two types of paramagnetic colloidal particles with size  $d=2.8 \mu\text{m}$  and  $d=1.0 \mu\text{m}$  driven above the FGF film. The applied field has amplitude  $H_0=1500 \text{ A/m}$ , anisotropy  $\beta = 0$  and angular frequency  $f = 3\text{Hz}$ . The videoclip corresponds to Fig.1(b) in the article.

**VideoS2**(.WMV): This videoclip shows the fractionation of a polydisperse suspension of paramagnetic colloids having 7 different sizes. The applied field has amplitude  $H_0=4300 \text{ A/m}$ , anisotropy  $\beta = 1.12$  and angular frequency  $f = 12\text{Hz}$ . This videoclip corresponds to the inset of Fig.4 of the article.