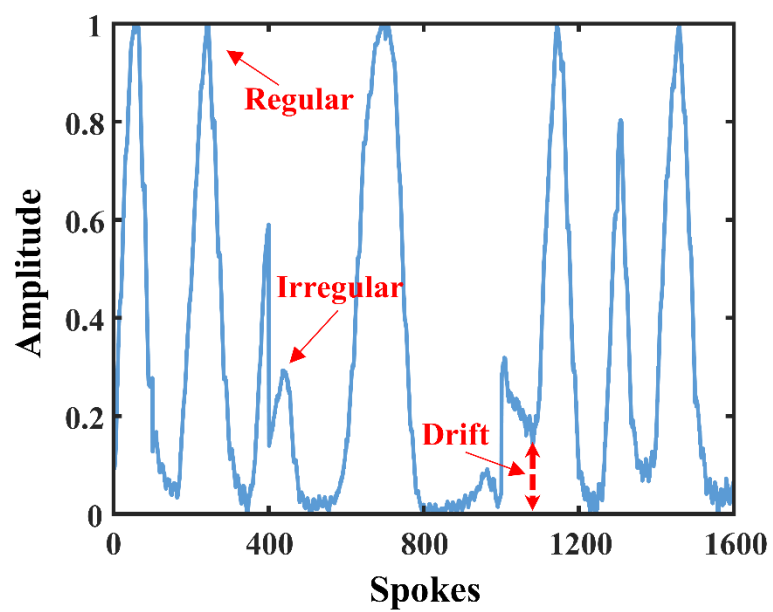
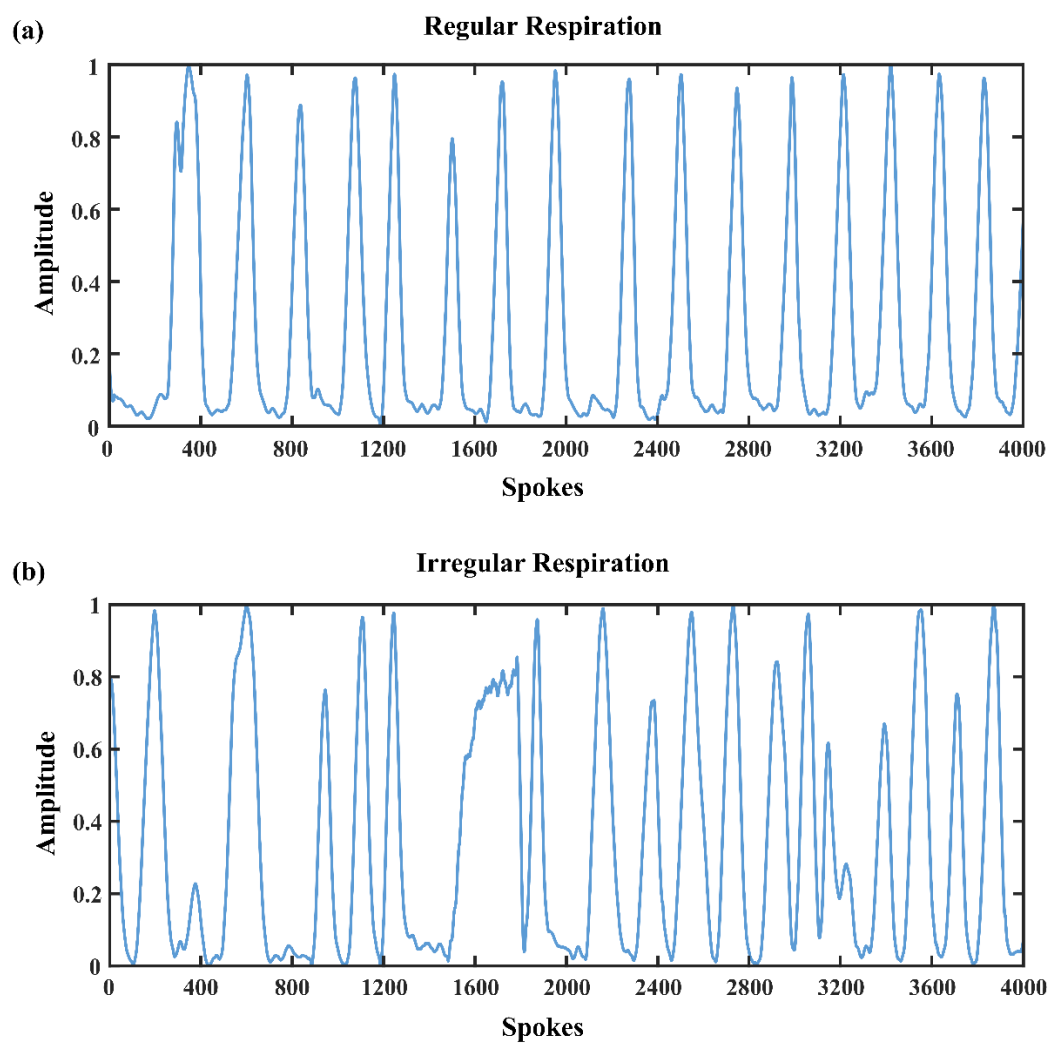


## Supplementary Materials



**Supplementary Fig. S1.** Respiratory signals extracted using AP-PCA near 4.6 ppm from *in vivo* human abdominal CEST data.



**Supplementary Fig. S2.** Representative respiratory signals extracted using AP-PCA from *in vivo* human abdominal CEST data. (a) Regular respiratory pattern and (b) irregular respiratory pattern.