

## Supplementary Information

### S1. IR spectra of PAM

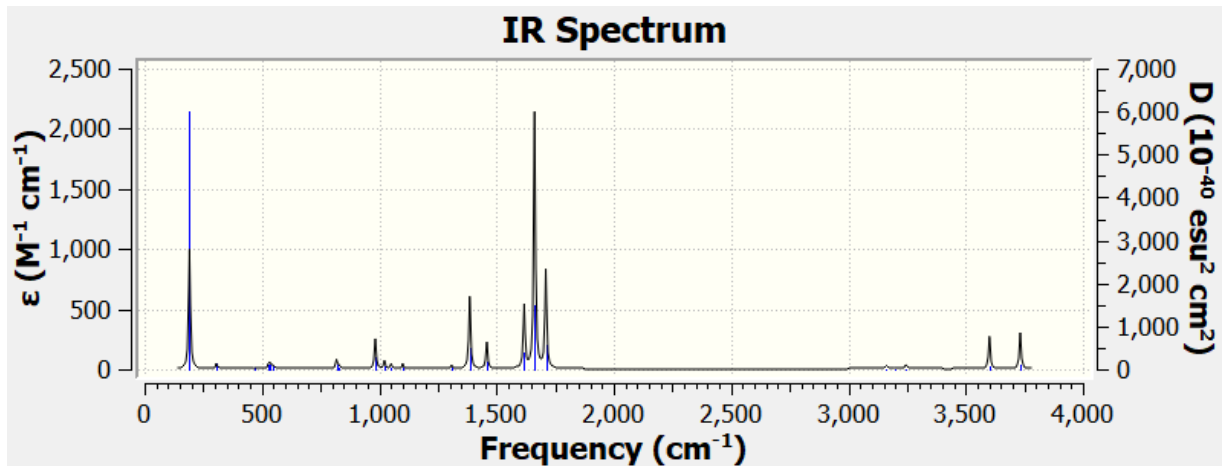


Figure S1 Theoretically measured IR spectra of Acrylamide

### S2. Soluble carbohydrates and proteins

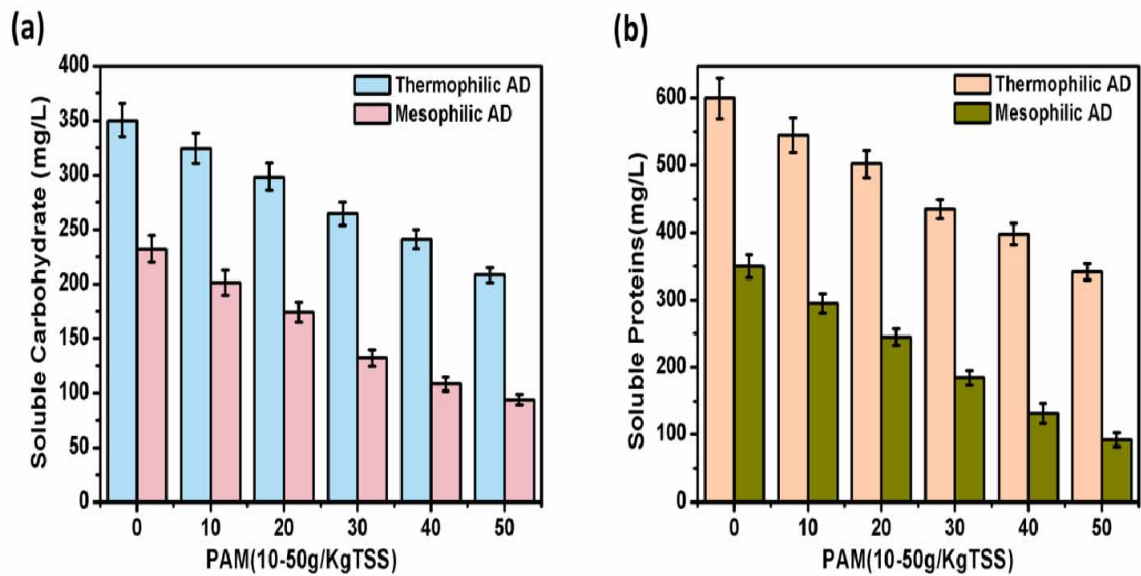
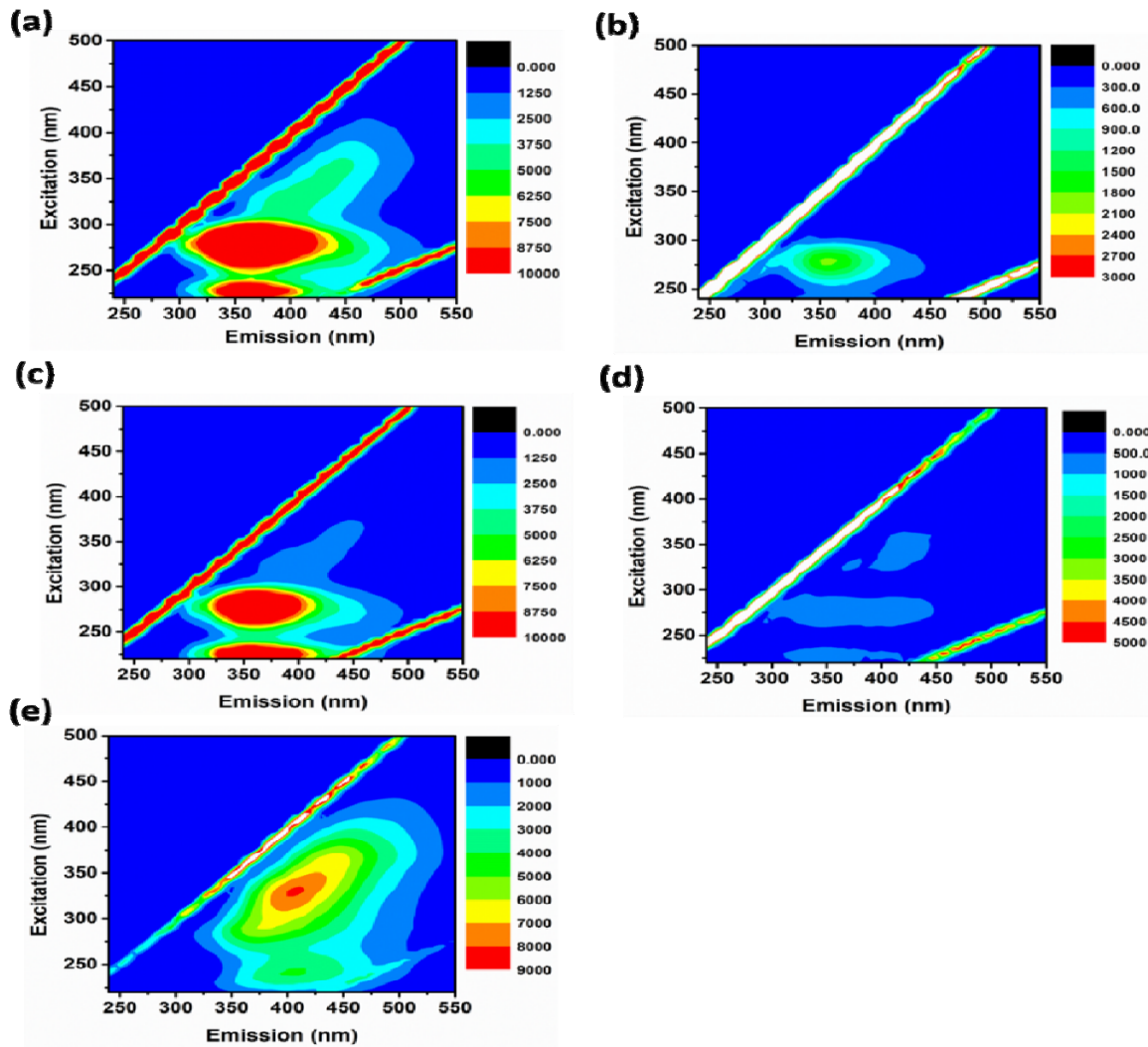


Figure S2 Effect of PAM addition on soluble protein and carbohydrate concentrations in mesophilic and thermophilic AD. The data shown was average values after stable operation, and error bars represent the standard deviation of triplicate measurements.

### S3: Fluorescence spectra



**Figure S3** The fluorescence EEM of AD reactors with 10g/kg TSS (a) Initial mesophilic AD (Day 1) (b) Final mesophilic AD (Day 15) (c) Initial thermophilic AD (Day 1) (d) Final thermophilic AD (Day 15) (e) Sludge without PAM