

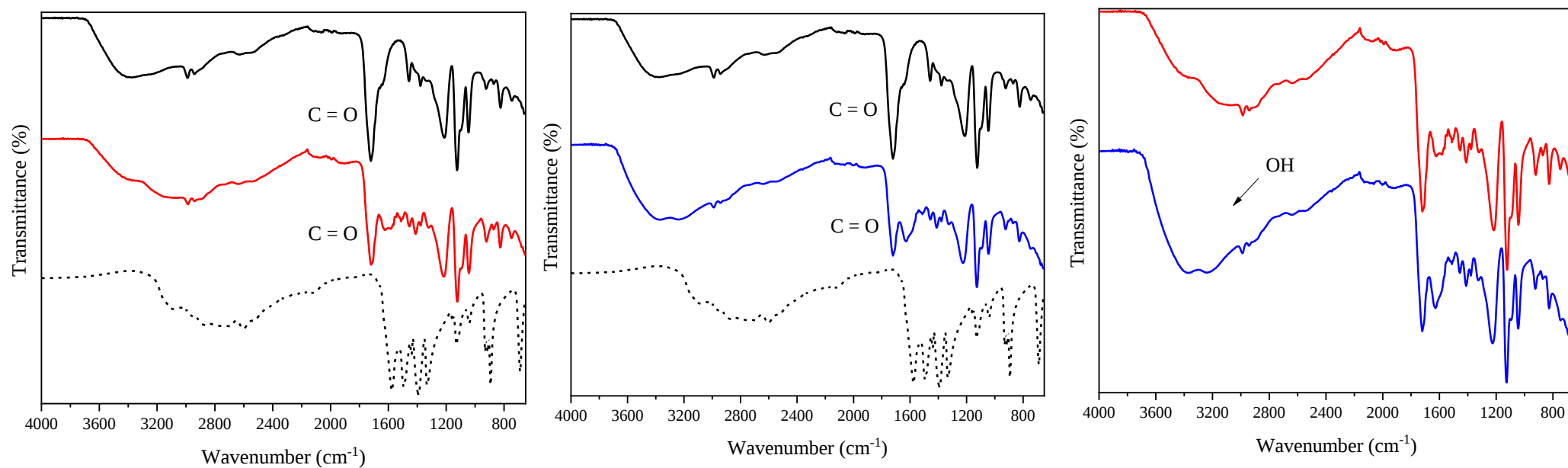
**Elaboration and characterization of natural deep eutectic solvents (NADES):  
application in the extraction of phenolic compounds**

Ianê Valente Pires<sup>a</sup>, Yasmin Caroline Nóvoa Sakurai<sup>a</sup>, Antônio Manoel da Cruz Rodrigues<sup>a</sup>, Nelson Rosa Ferreira<sup>a</sup>, Sanclayton Geraldo Carneiro Moreira<sup>b</sup>, Luiza Helena Meller da Silva<sup>a\*</sup>,

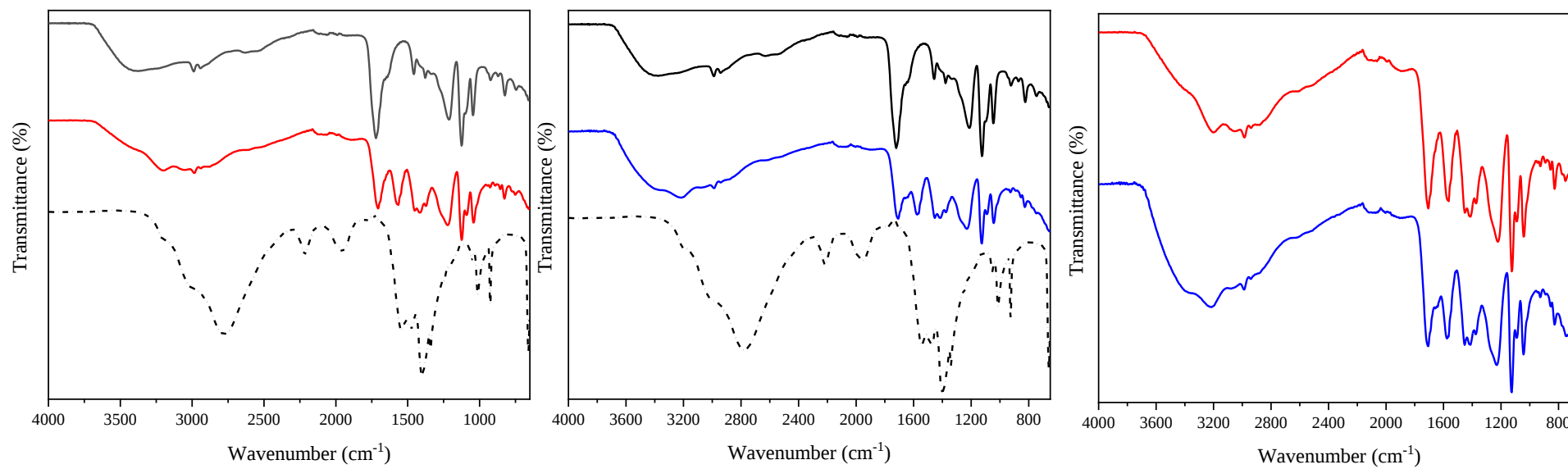
<sup>a</sup>*Programa de Pós-Graduação em Ciência e Tecnologia de Alimentos* [Postgraduate Program in Food Science and Technology], Universidade Federal do Pará, Rua Augusto Corrêa S/N, Guamá, Belém, Pará, 66075-900, Brazil.

<sup>b</sup>*Instituto de Ciências Exatas e Naturais (ICEN), Universidade Federal do Pará*, Rua Augusto Corrêa S/N, Guamá, Belém, Pará, 66075-900, Brazil.

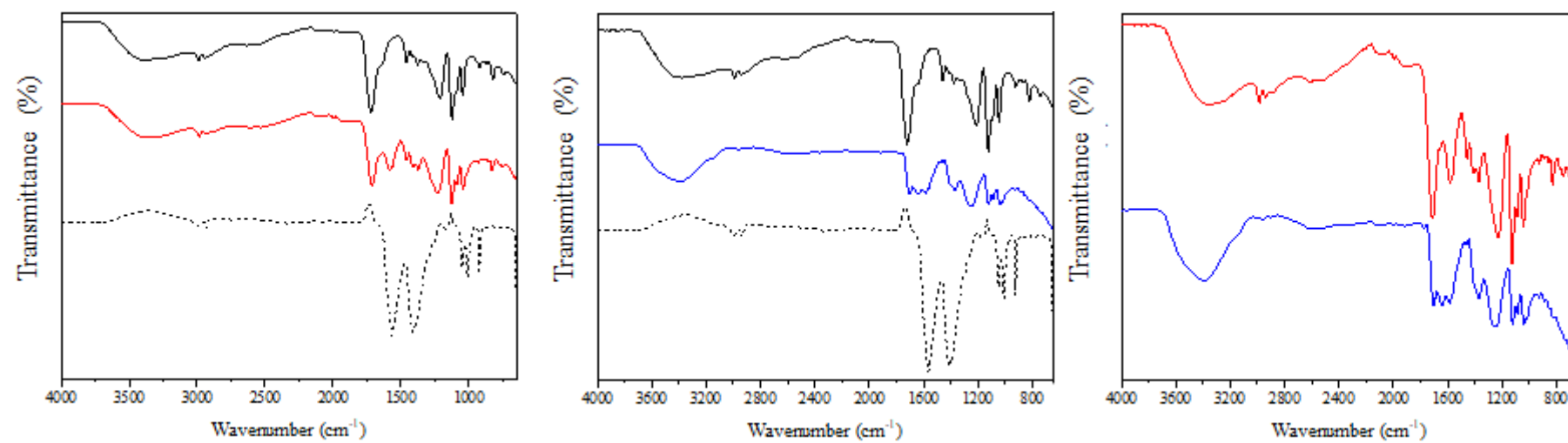
**NADES behavior (Supplementary Figures and Table)**



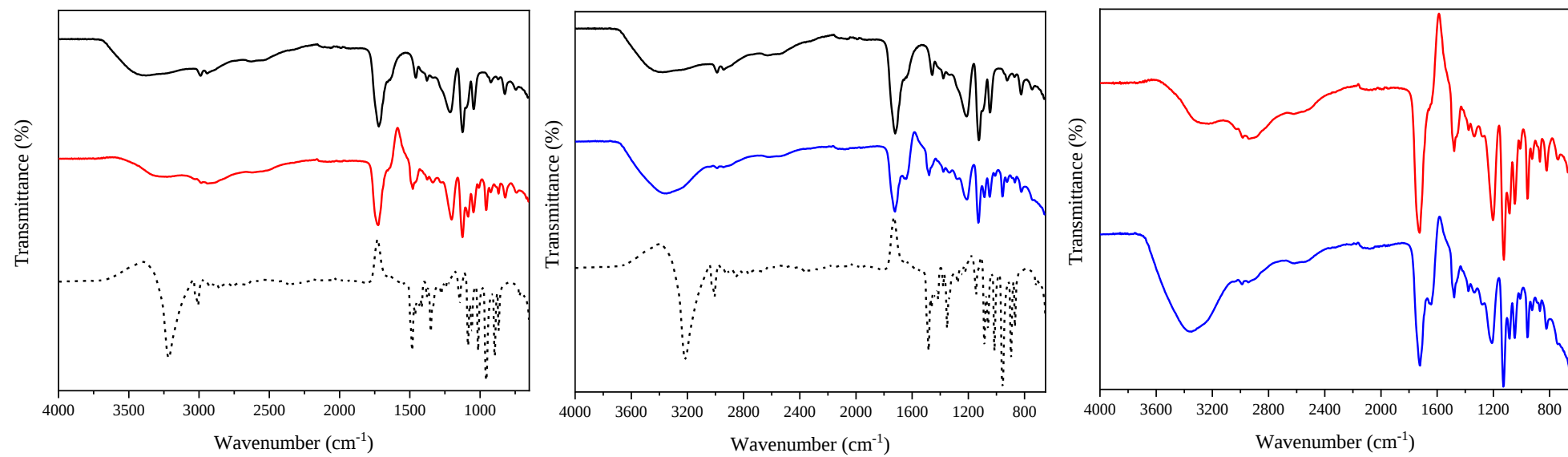
**Figure S1.** Spectra (FTIR) of pure components. — lactic acid, ---- glycine, — NADES without water; — lactic acid, --- glycine, — NADES with water; comparative behavior of — NADES without water and — NADES with water.



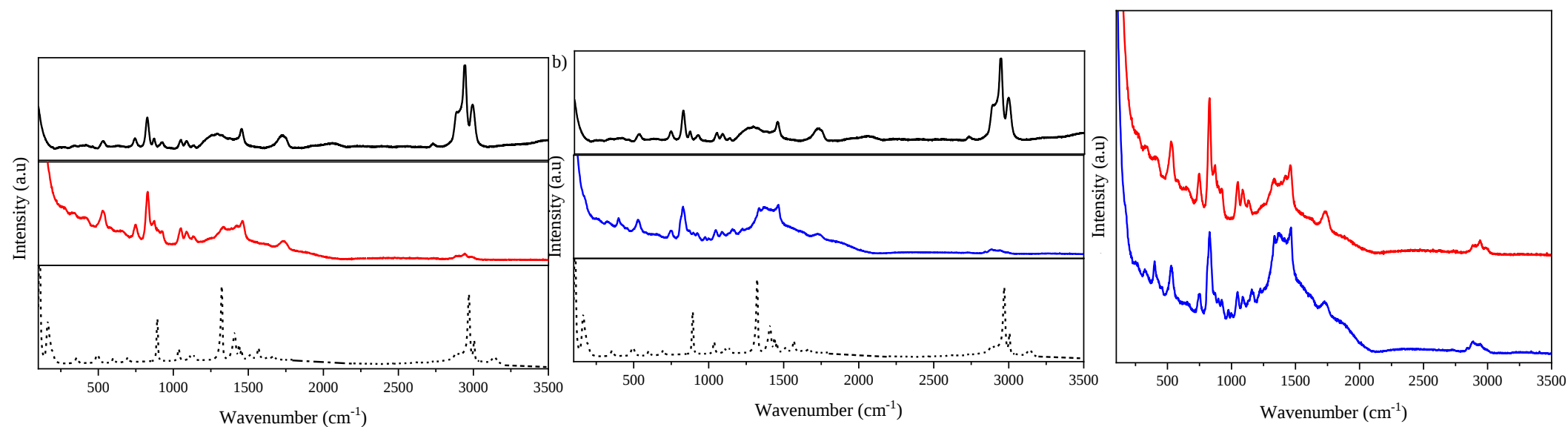
**Figure S2.** Spectra (FTIR) of pure components. — lactic acid, ---- ammonium acetate, — NADES without water; — lactic acid, --- ammonium acetate, — NADES with water; — NADES without water, — NADES with water.



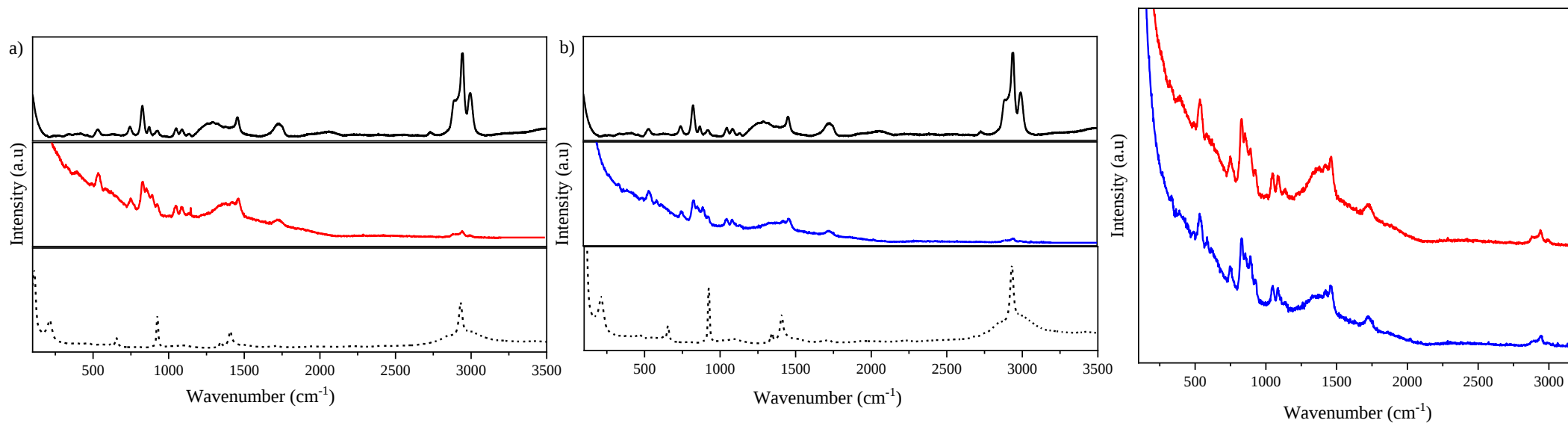
**Figure S3.** Spectra (FTIR) of pure components. — lactic acid, ---- sodium acetate, — NADES without water; — lactic acid, --- sodium acetate, — NADES with water; — NADES without water, — NADES with water.



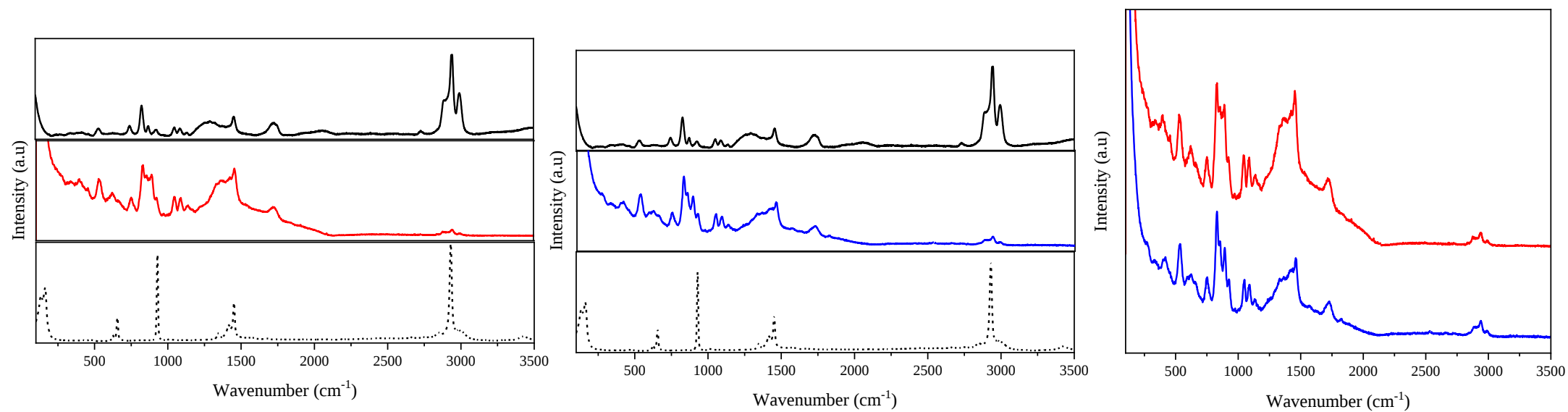
**Figure S4.** Spectra (FTIR) of pure components. — lactic acid, ---- choline chloride, — NADES without water; — lactic acid, --- choline chloride, — NADES with water; — NADES without water, — NADES with water.



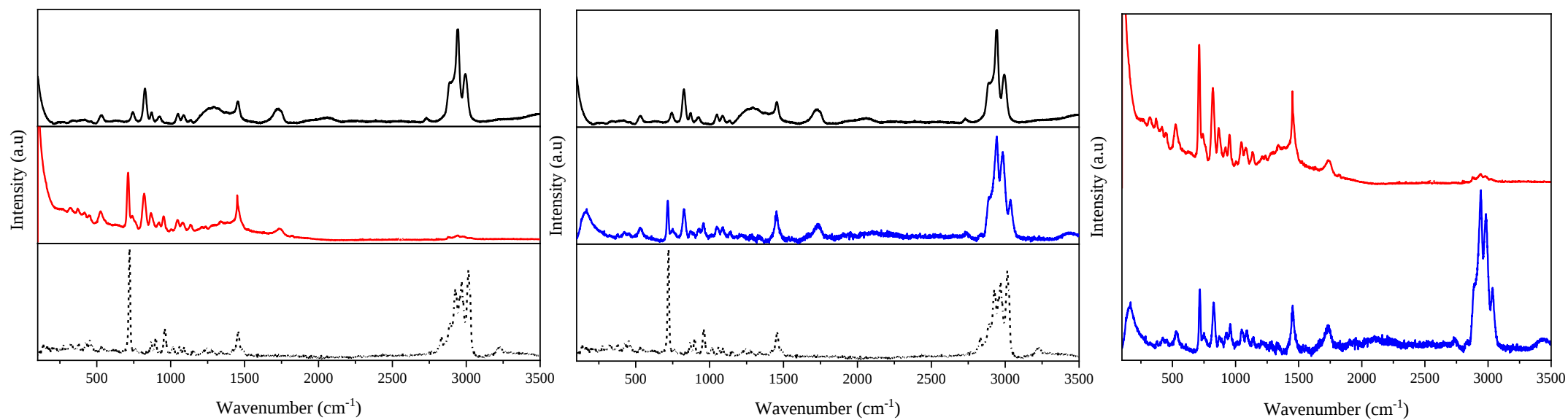
**Figure S5.** Raman spectra of pure components. — lactic acid, ---- glycine, — NADES without water; — lactic acid, --- glycine, — NADES with water; — NADES without water, — NADES with water.



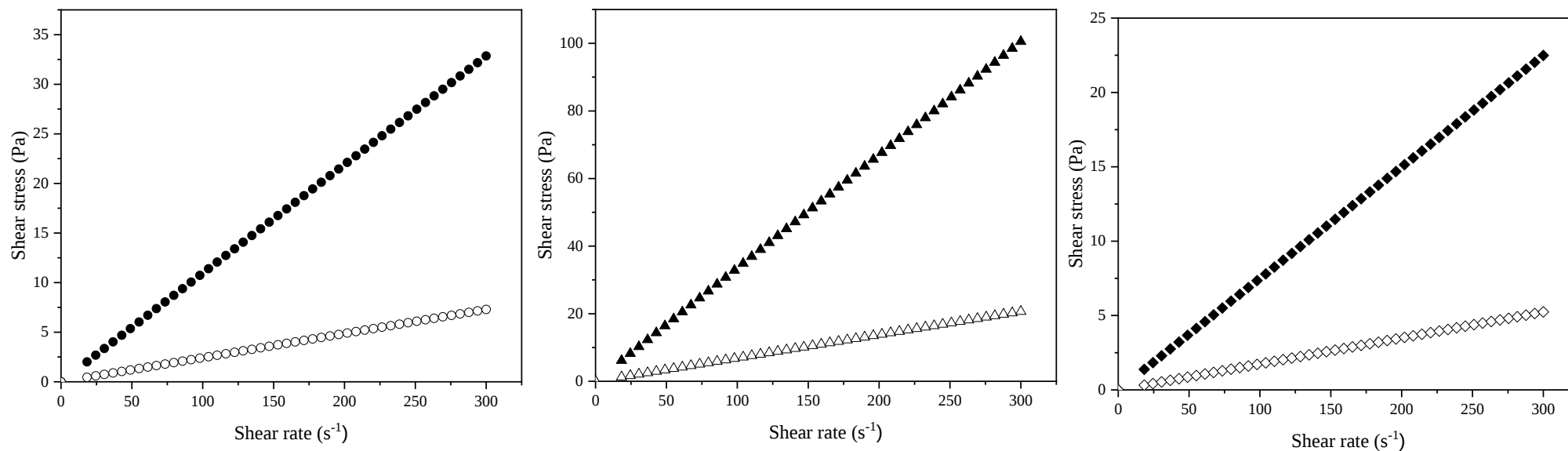
**Figure S6.** Raman spectra of pure components. — lactic acid, ---- ammonium acetate, — NADES without water; — lactic acid, --- ammonium acetate, — NADES with water; — NADES without water, — NADES with water.



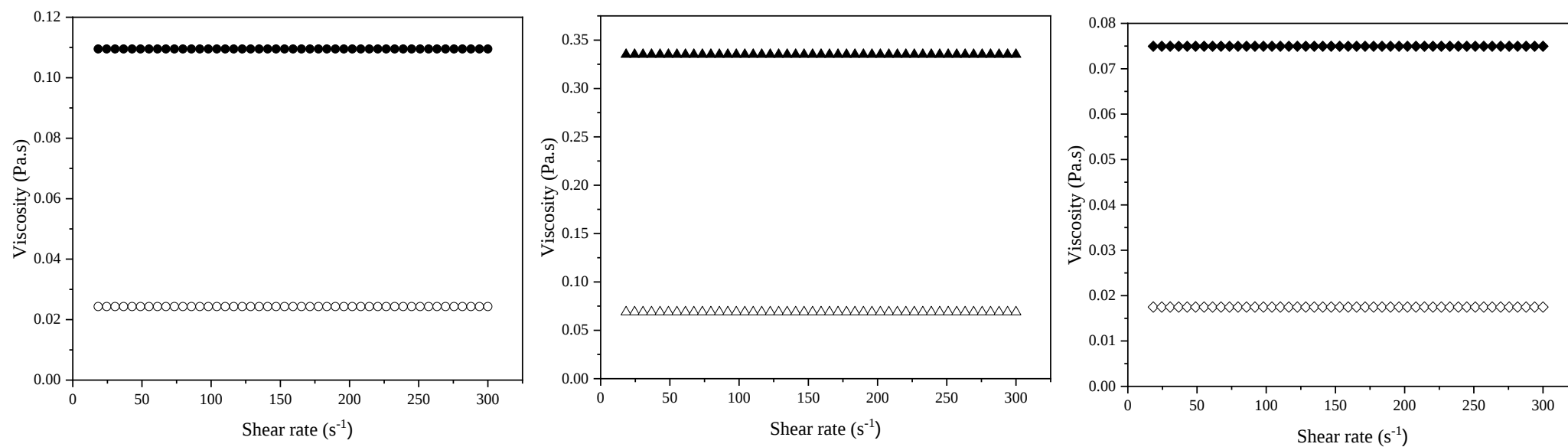
**Figure S7.** Raman spectra of pure components. — lactic acid, ---- sodium acetate, — NADES without water; — lactic acid, --- sodium acetate, — NADES with water; — NADES without water, — NADES with water.



**Figure S8.** Raman spectra of pure components. — lactic acid, ---- choline chloride, — NADES without water; — lactic acid, --- choline chloride, — NADES with water; — NADES without water, — NADES with water.



**Figure S9.** Flow curves for NADES fitted to Newton's model at 40°C. Lactic acid: ammonium acetate ● (without water) ○ (with water); lactic acid: sodium acetate ▲ (without water) △ (with water); lactic acid:choline chloride ◆ (without water) ◇ (with water).



**Figure S10.** Viscosity profile graph for NADES at 40°C. Lactic acid: ammonium acetate ● (without water) ○ (with water); lactic acid: sodium acetate ▲ (without water) △ (with water); lactic acid:choline chloride ◆ (without water) ◇ (with water).

**Table S1.** Tests performed for extractions with NADES.

| Tests | NADES         | Amplitude | Time<br>(Minutes) | Temperature<br>(°C) | Volume<br>(mL) |
|-------|---------------|-----------|-------------------|---------------------|----------------|
| 1     | Without water | 60        | 5                 | 40                  | 20             |
| 2     | Without water | 70        | 5                 | 40                  | 20             |
| 3     | With water    | 70        | 5                 | 40                  | 20             |
| 4     | With water    | 70        | 10                | 40                  | 20             |