Raman mapping of piezoelectric poly (L-Lactic acid) films for force sensors

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Table S1 Wavenumber of PLLA films obtained at the varied time treatment

| Raman (cm⁻¹) | ATR-FTIR (cm⁻¹) | Ref. [Kister] |
|--------------|-----------------|---------------|
| 0h 3h 12h 24h | 0h 3h 12h 24h   | Assignment    |
| 2948 2949 2948 2948 W* | 2952 VS* 2952 2952 2952 | ν(CH)         |
| - - - - | - - - - | ν(CH)         |
| 2878 2878 2878 2878 M* | 2864 VS 2868 2864 2866 | νCH           |
| - - - - | - - - - | νCH           |
| 1776 1777 1777 1777 S* | - - - - | ν(C=O)        |
| 1766 1765 1765 1765 S | - - - - | ν(C=O)        |
| 1749 1749 1749 1749 M | 1747 S 1724 1747 1749 | ν(C=O)        |
| - - - - | - - - - | ν(C=O)        |
| 1455 1454 1453 1455 S | 1454 S 1452 1454 1453 | δ(CH₃)        |
| 1388 1389 1388 1389 M | - - - - | δ(CH₃)        |
| - - - - | 1379 M 1377 1377 1377 | δ(CH₃ + δ(CH₃) |
| 1365 1364 1365 1365 M | 1361 M 1361 1361 | δ(CH₃ + δ(CH₃) |
| 1346 1346 1346 1346 M | - - - - | δ(CH₃)        |
| 1315 1312 1312 1312 | - - - - | δ(CH)         |
| 1303 1302 1303 1303 | - - - - | δ(CH)         |
| 1294 1294 1294 1294 M | 1299 W 1310 1299 1299 | δ(CH)         |
| - - - - | 1218 W - 1236 S - | ν₄(COC)       |
| 1182 1182 1182 1182 W | 1182 M - 1182 1182 | ν₄(COC)       |
| - - - - | 1205 W - 1205 1205 | ν(C-OH)       |
| 1104 1044 1043 1044 S | 1041 M 1036 1041 1041 | ν(C=CH₃)      |
| - - - - | 974 - - - | δ(C-H)        |
| 924 924 924 924 W | - - - - | τ(CH₃ + γ(CH) |
| - - - - | 910 W 905 918 918 | γ(CH)         |
| 875 875 875 875 VS | - - - - | ν(COC)        |
| - - - - | 891 - - - | δ(C-H)        |
| 737 737 737 737 M | 754 W 754 754 754 | δ(C=O)        |
| 710 713 713 713 M | - - - - | γ(C=O)        |
| - - 679 679 W | 689 W 698 689 689 | γ(C=O)        |
| - - 577 579 W | - - - - | δ₁(C-CH₃ + δ(COC) |
| - - 515 515 W | - - - - | δ₁(C-CH₃ + δ(COC) |
| 413 413 413 413 VS | - - - - | δ(COC)        |
| 398 398 398 398 VS | - - - - | δ(COC)        |
| 347 347 347 347 W | - - - - | δ₂(C-CH₃ + δ(COC) |
| 305 308 307 306 S | - - - - | δ₂(C-CH₃ + δ(COC) |
| 239 240 - - | 241 W - - - | δ(C=O)        |
| 206 207 207 206 S | - - - - | τ(CC)         |
| 159 159 159 159 S | - - - - | τ(CC)         |
| 116 116 116 116 S | - - - - | Skeletal torsion |

*VS – very strong intensity, S – strong, M – medium, W – weak, s – symmetric, as – asymmetric

Reference

G. Kister, G. Cassanas, M. Vert, B. Pauvert and A. Térol. Vibrational analysis of poly(L-lactic acid). J. Raman Spectrosc., 1995, 26, 307-311. DOI: 10.1002/jrs.1250260409.