**FIG. S1.** Relationship between monomer to initiator ratio and molecular weight of admicelled PMMA.

****

**TABLE SI.** Thermal stability of PLA and its blends

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample | *T*d onset [°C] | *T*10 [°C] | *T*d peak [°C] | *T*d end [°C] |
| PLA | 331.3 | 338.7 | 363.9 | 383.8 |
|  5 wt.% NR  | 327.5 | 335.0 | 361.0 | 400.0 |
| 10 wt.% NR  | 329.5 | 337.0 | 358.6 | 412.0 |
| 15 wt.% NR  | 324.6 | 334.6 | 356.3 | 417.1 |
|  5 wt.% M20000 | 328.6 | 336.1 | 362.2 | 431.1 |
| 10 wt.% M20000 | 328.1 | 338.1 | 363.0 | 433.1 |
| 15 wt.% M20000 | 329.6 | 339.6 | 363.0 | 437.6 |
|  5 wt.% M30000 | 326.9 | 334.4 | 360.1 | 429.4 |
| 10 wt.% M30000 | 329.3 | 336.8 | 362.8 | 436.8 |
| 15 wt.% M30000 | 327.6 | 337.6 | 362.6 | 437.6 |
|  5 wt.% M40000 | 324.8 | 334.8 | 362.3 | 432.3 |
| 10 wt.% M40000 | 324.2 | 334.2 | 364.3 | 441.7 |
| 15 wt.% M40000 | 327.7 | 337.7 | 362.7 | 440.2 |

**TABLE SII.** Flexural results of PLA and PLA blends

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample | Flexural stress at yield[MPa] | Stress at 5% strain[MPa] | Flexural strain at yield [%] | Modulus at 1% strain[MPa] |
| PLA | 83.44±0.55 | 80.85±0.26 | 3.98±0.10 | 2432±94.47 |
|  5 wt.% NR\*  | 58.93±2.42 | 53.77±2.74 | 3.22±0.23 | 2083±15.28 |
| 10 wt.% NR\*  | 61.30±0.26 | 58.00±0.46 | 3.50±0.03 | 1957±60.73 |
| 15 wt.% NR\*  | 50.36±3.41 | 47.54±3.33 | 3.51±0.10 | 1704±85.62 |
|  5 wt.% M20000\* | 75.56±1.41 | 71.00±1.06 | 3.55±0.08 | 2358±56.44 |
| 10 wt.% M20000\* | 63.18±1.01 | 58.28±0.96 | 3.34±0.06 | 2071±80.78 |
| 15 wt.% M20000\* | 52.84±1.13 | 47.94±1.19 | 3.18±0.08 | 1886±36.56 |
|  5 wt.% M30000\* | 74.13±0.67 | 69.70±0.61 | 3.62±0.06 | 2223±85.51 |
| 10 wt.% M30000\* | 60.56±1.54 | 54.54±2.76 | 3.20±0.09 | 1996±71.57 |
| 15 wt.% M30000\* | 53.48±1.60 | 48.00±1.45 | 3.08±0.11 | 1954±70.64 |
|  5 wt.% M40000\* | 71.82±1.16 | 67.14±1.01 | 3.52±0.04 | 2196±78.99 |
| 10 wt.% M40000\* | 57.03±0.92 | 52.90±0.92 | 3.47±0.09 | 1867±80.65 |
| 15 wt.% M40000\* | 46.78±3.42 | 43.50±3.03 | 3.34±0.27 | 1695±81.22 |

\* The test was stopped before sample breaking