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APPENDICES

Appendix A PCL to Porogen Ratios

For the porous scaffolds to study effects of PCL to porogen ratios on porosity and density, sucrose was used as a porogen. Raw data of porosity and density depended on PCL to sucrose ratios were shown in Table A1 and A2, respectively.

Table A1 Raw data of porosity of porous scaffolds

| PCL:Sucrose | %Porosity | | | | | | | | |
|--------------|-----------|---------|---------|---------|---------|---------|---------|----------------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 1:5 | 76.9231 | 80.7692 | 80.0000 | 81.4815 | 83.3333 | 80.7692 | 81.4815 | 80.6797 | 1.9544 |
| 1:7.5 | 83.3333 | 81.4815 | 80.7692 | 85.7143 | 81.4815 | 82.7586 | 81.4815 | 82.4314 | 1.6915 |
| 1:10 | 90.0000 | 92.5926 | 86.2069 | 84.6154 | 84.6154 | 80.7692 | 84.0000 | 86.1142 | 3.9709 |
| 1:15 | 87.5000 | 90.9091 | 93.7500 | 95.2381 | 95.2381 | 95.6522 | 95.0000 | 93.3268 | 3.0411 |

Table A2 Raw data of density of porous scaffolds

| PCL:Sucrose | Density (g/cm ³) | | | | | | | | |
|--------------|------------------------------|--------|--------|--------|--------|--------|--------|---------------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 1:5 | 0.1775 | 0.1783 | 0.1836 | 0.1697 | 0.1481 | 0.1872 | 0.1616 | 0.1723 | 0.0137 |
| 1:7.5 | 0.1095 | 0.1217 | 0.1362 | 0.1327 | 0.1240 | 0.1446 | 0.1360 | 0.1292 | 0.0117 |
| 1:10 | 0.0916 | 0.1000 | 0.0894 | 0.0977 | 0.1077 | 0.1115 | 0.1141 | 0.1017 | 0.0096 |
| 1:15 | 0.0767 | 0.0521 | 0.0536 | 0.0873 | 0.0874 | 0.0824 | 0.0921 | 0.0759 | 0.0165 |

The pores interconnectivity has a significant on the mechanical properties such as compressive modulus. As shown raw data in Table A3, compressive modulus of porous scaffolds were varied by PCL to sucrose ratios.

Table A3 Raw data of compressive modulus of porous scaffolds

| PCL:Sucrose | Compressive Modulus (MPa) | | | | | | | | |
|--------------|---------------------------|--------|--------|--------|--------|--------|--------|---------------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 1:5 | 0.9707 | 0.9634 | 0.9258 | 0.9054 | 0.9745 | 0.8098 | 0.9420 | 0.9273 | 0.0576 |
| 1:7.5 | 0.3730 | 0.3799 | 0.3258 | 0.3293 | 0.2645 | 0.3202 | 0.3265 | 0.3313 | 0.0382 |
| 1:10 | 0.1309 | 0.1242 | 0.1296 | 0.1286 | 0.1423 | 0.1363 | 0.1300 | 0.1317 | 0.0059 |
| 1:15 | 0.0553 | 0.0526 | 0.0593 | 0.0529 | 0.0493 | 0.0531 | 0.0530 | 0.0536 | 0.0030 |

Appendix B Various HAp Composition

For the porous scaffolds to study effects of hydroxyapatite on porosity and density. Raw data of porosity and density depended on hydroxyapatite were shown in Table B1 and B2, respectively.

Table B1 Raw data of porosity of porous scaffolds

| HAp | %Porosity | | | | | | | | Average | SD |
|-----|-----------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 0 | 90.0000 | 92.5926 | 86.2069 | 84.6154 | 84.6154 | 80.7692 | 84.0000 | 86.1142 | 3.9709 | |
| 10 | 87.5000 | 89.2857 | 87.8788 | 86.9565 | 88.0000 | 81.4815 | 86.2069 | 86.7585 | 2.5141 | |
| 20 | 89.2857 | 90.3226 | 83.8710 | 77.7778 | 89.2857 | 89.2857 | 88.4615 | 86.8986 | 4.5390 | |
| 30 | 86.2069 | 86.6667 | 90.0000 | 86.2069 | 80.7692 | 85.7143 | 83.3333 | 85.5568 | 2.8783 | |
| 40 | 89.2857 | 83.3333 | 87.0968 | 89.2857 | 89.2857 | 92.5926 | 84.0000 | 87.8400 | 3.2778 | |
| 50 | 85.7143 | 85.7143 | 86.6667 | 88.0000 | 86.2069 | 90.0000 | 83.3333 | 86.5194 | 2.0766 | |

Table B2 Raw data of density of porous scaffolds

| HAp | Density (g/cm ³) | | | | | | | | Average | SD |
|-----|------------------------------|--------|--------|--------|--------|--------|--------|--------|---------|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 0 | 0.0916 | 0.1000 | 0.0894 | 0.0977 | 0.1077 | 0.1115 | 0.1141 | 0.1017 | 0.0096 | |
| 10 | 0.1054 | 0.1057 | 0.1001 | 0.1173 | 0.1067 | 0.1003 | 0.0912 | 0.1038 | 0.0080 | |
| 20 | 0.1141 | 0.1217 | 0.1097 | 0.1121 | 0.1116 | 0.1131 | 0.1163 | 0.1141 | 0.0039 | |
| 30 | 0.1156 | 0.1170 | 0.1133 | 0.1144 | 0.1227 | 0.1200 | 0.1106 | 0.1162 | 0.0041 | |
| 40 | 0.1197 | 0.1170 | 0.1097 | 0.1298 | 0.1376 | 0.1379 | 0.1454 | 0.1282 | 0.0130 | |
| 50 | 0.1197 | 0.1253 | 0.1133 | 0.1582 | 0.1338 | 0.1247 | 0.1327 | 0.1297 | 0.0144 | |

The pores interconnectivity has a significant on the mechanical properties such as compressive modulus. As shown raw data in Table B3, compressive modulus of porous scaffolds were varied by hydroxyapatite contents.

Table B3 Raw data of compressive modulus of porous scaffolds

| HAp | Compressive Modulus (MPa) | | | | | | | | | | | |
|-----|---------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average | SD |
| 0 | 0.1309 | 0.1242 | 0.1296 | 0.1286 | 0.1423 | 0.1363 | 0.1300 | 0.1178 | 0.1112 | 0.1635 | 0.1314 | 0.0143 |
| 10 | 0.1851 | 0.2013 | 0.1794 | 0.1819 | 0.1511 | 0.1541 | 0.1851 | 0.1656 | 0.1671 | 0.1811 | 0.1752 | 0.0155 |
| 20 | 0.2023 | 0.1983 | 0.2131 | 0.1928 | 0.1874 | 0.2061 | 0.1811 | 0.2064 | 0.2179 | 0.2211 | 0.2026 | 0.0130 |
| 30 | 0.2316 | 0.2546 | 0.2479 | 0.2413 | 0.2333 | 0.2661 | 0.2521 | 0.2471 | 0.2478 | 0.2531 | 0.2475 | 0.0102 |
| 40 | 0.2448 | 0.2840 | 0.2750 | 0.3333 | 0.2483 | 0.2647 | 0.2656 | 0.3014 | 0.2697 | 0.2936 | 0.2780 | 0.0264 |
| 50 | 0.2893 | 0.2959 | 0.3328 | 0.3424 | 0.3469 | 0.3614 | 0.3100 | 0.3203 | 0.3051 | 0.2899 | 0.3194 | 0.0255 |

Table B4 Raw data of water absorption of porous scaffolds at 1 min

| HAp | %Water Absorption | | | | | | | | |
|-----|-------------------|----------|----------|----------|----------|----------|----------|-----------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 0 | 196.8787 | 191.4959 | 183.3850 | 186.8142 | 189.0703 | 183.1833 | 161.1498 | 184.5682 | 11.3768 |
| 10 | 179.9114 | 147.8413 | 162.3962 | 195.6396 | 211.7355 | 154.4812 | 232.8864 | 183.5559 | 31.5053 |
| 20 | 177.6942 | 171.1367 | 158.3397 | 170.4575 | 178.5124 | 193.5345 | 157.5798 | 172.4650 | 12.4815 |
| 30 | 132.7092 | 129.6954 | 163.2490 | 129.4031 | 137.9560 | 133.5426 | 163.9029 | 141.4940 | 15.3501 |
| 40 | 121.0865 | 149.7034 | 147.2521 | 143.7898 | 141.6460 | 140.1093 | 145.1587 | 141.2494 | 9.4625 |
| 50 | 128.3400 | 134.2437 | 102.8135 | 146.4070 | 115.5330 | 143.2632 | 130.1215 | 128.6746 | 15.2861 |

Table B5 Raw data of water absorption of porous scaffolds at 3 min

| HAp | %Water Absorption | | | | | | | | |
|-----|-------------------|----------|----------|----------|----------|----------|----------|-----------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 0 | 225.7211 | 219.7140 | 214.2709 | 210.2342 | 215.4948 | 204.3857 | 201.5013 | 213.0460 | 8.4538 |
| 10 | 191.4268 | 181.7095 | 175.3459 | 211.0991 | 223.7003 | 187.8393 | 245.6983 | 202.4027 | 25.4839 |
| 20 | 191.6353 | 184.0677 | 176.4280 | 188.1765 | 186.2683 | 205.3050 | 178.5904 | 187.2102 | 9.5678 |
| 30 | 163.6364 | 160.8991 | 177.0639 | 145.2808 | 171.8420 | 157.0105 | 171.3355 | 163.8669 | 10.7615 |
| 40 | 134.2794 | 163.5265 | 166.7219 | 182.4343 | 171.9967 | 153.4878 | 168.6122 | 163.0084 | 15.3819 |
| 50 | 150.1005 | 157.2742 | 120.4180 | 162.6633 | 135.6853 | 169.6638 | 158.7314 | 150.6481 | 17.0941 |

Table B6 Raw data of water absorption of porous scaffolds at 5 min

| HAp | %Water Absorption | | | | | | | | |
|-----|-------------------|----------|----------|----------|----------|----------|----------|----------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 0 | 244.8439 | 241.1287 | 232.5750 | 225.7620 | 231.6228 | 218.4432 | 223.1783 | 231.0791 | 9.5163 |
| 10 | 216.3239 | 198.1330 | 212.9496 | 246.5586 | 255.0459 | 209.0368 | 250.9870 | 227.0050 | 23.1368 |
| 20 | 214.9436 | 209.4189 | 205.5217 | 202.8995 | 227.8767 | 226.2268 | 201.8617 | 212.6784 | 10.7560 |
| 30 | 188.8251 | 183.7918 | 209.4874 | 160.2764 | 176.4245 | 187.2646 | 221.7057 | 189.6822 | 20.4104 |
| 40 | 143.4146 | 177.2590 | 178.7075 | 186.3624 | 191.8807 | 159.1098 | 185.0726 | 174.5438 | 17.2388 |
| 50 | 172.5766 | 165.8351 | 136.1334 | 171.7085 | 170.5584 | 188.1935 | 213.9811 | 174.1409 | 23.5212 |

Appendix C The Effect of NaOH Concentration on Porous Scaffolds

For the porous scaffolds to study effects of NaOH concentration on water absorption, 1:10 was chosen to investigate. Raw data of water absorption depended on NaOH concentrations were shown in Table C1.

Table C1 Raw data of water absorption of porous scaffolds at various NaOH concentration at 1 min

| | NaOH | %Water Absorption | | | | | | |
|------------------------|-------|-------------------|-----------|-----------|-----------|-----------|-----------|---------|
| | | 1 | 2 | 3 | 4 | 5 | Average | SD |
| Hydrolysis for 6 h | 0 M | 191.4959 | 183.3850 | 186.8142 | 189.0703 | 183.1833 | 186.7897 | 3.6038 |
| | 0.1 M | 472.9365 | 482.7682 | 465.0992 | 467.1146 | 493.5888 | 476.3015 | 11.8520 |
| | 1.0 M | 766.8160 | 615.5039 | 704.4487 | 719.8736 | 716.4896 | 704.6264 | 55.1897 |
| | 4.0 M | 854.8516 | 879.4559 | 837.8168 | 830.3903 | 830.6292 | 846.6288 | 20.8720 |
| Hydrolysis for 24 h | 0.1 M | 573.7059 | 557.4639 | 510.2525 | 566.2425 | 543.3818 | 550.2093 | 25.0247 |
| | 1.0 M | 818.6308 | 821.3192 | 858.9646 | 798.9189 | 809.2508 | 821.4169 | 22.7584 |
| | 4.0 M | 1089.6901 | 1238.2748 | 1006.0606 | 1034.0571 | 1042.1907 | 1082.0547 | 92.3729 |

Table C2 Raw data of water absorption of porous scaffolds at various NaOH concentration at 3 min

| | NaOH | %Water Absorption | | | | | | |
|------------------------|-------|-------------------|-----------|-----------|-----------|-----------|-----------|---------|
| | | 1 | 2 | 3 | 4 | 5 | Average | SD |
| Hydrolysis for 6 h | 0 M | 219.7140 | 214.2709 | 210.2342 | 215.4948 | 204.3857 | 212.8199 | 5.8011 |
| | 0.1 M | 494.4444 | 529.9162 | 496.7671 | 497.5955 | 526.2898 | 509.0026 | 17.5214 |
| | 1.0 M | 809.1079 | 665.0000 | 751.1025 | 771.4737 | 760.0157 | 751.3400 | 53.0858 |
| | 4.0 M | 866.6800 | 898.7008 | 852.7875 | 845.2859 | 841.8678 | 861.0644 | 23.0977 |
| Hydrolysis for 24 h | 0.1 M | 612.0405 | 565.3692 | 551.1119 | 596.7793 | 580.3749 | 581.1352 | 24.2406 |
| | 1.0 M | 843.9207 | 830.6635 | 870.5387 | 814.4505 | 825.7263 | 837.0599 | 21.4968 |
| | 4.0 M | 1124.5634 | 1264.3450 | 1026.2889 | 1054.7246 | 1063.0426 | 1106.5929 | 95.1897 |

Table C3 Raw data of water absorption of porous scaffolds at various NaOH concentration at 5 min

| | NaOH | %Water Absorption | | | | | | |
|---------------------|-------|-------------------|-----------|-----------|-----------|-----------|-----------|----------|
| | | 1 | 2 | 3 | 4 | 5 | Average | SD |
| Hydrolysis for 6 h | 0 M | 241.1287 | 232.5750 | 225.7620 | 231.6228 | 218.4432 | 229.9063 | 8.4349 |
| | 0.1 M | 545.9524 | 553.6099 | 531.5209 | 534.5827 | 562.1775 | 545.5687 | 12.8325 |
| | 1.0 M | 812.5793 | 694.4961 | 767.6209 | 790.3200 | 774.7737 | 767.9580 | 44.5374 |
| | 4.0 M | 873.4964 | 907.6736 | 860.4288 | 852.8594 | 849.6241 | 868.8165 | 23.5855 |
| Hydrolysis for 24 h | 0.1 M | 637.1718 | 606.6613 | 575.2733 | 627.7932 | 610.2142 | 611.4228 | 23.7798 |
| | 1.0 M | 844.3696 | 846.2112 | 870.6650 | 819.3874 | 830.9633 | 842.3193 | 19.2202 |
| | 4.0 M | 1172.4507 | 1318.6581 | 1055.8048 | 1084.8814 | 1097.9310 | 1145.9452 | 105.7021 |

Table C4 Raw data of compressive modulus of porous scaffolds

| | NaOH | Compressive Modulus (MPa) | | | | | | | | |
|---------------------|-------|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| Hydrolysis for 6 h | 0 M | 0.1309 | 0.1242 | 0.1296 | 0.1286 | 0.1423 | 0.1363 | 0.1300 | 0.1317 | 0.0059 |
| | 0.1 M | 0.1333 | 0.1343 | 0.1246 | 0.1378 | 0.1246 | 0.1308 | 0.1307 | 0.1309 | 0.0049 |
| | 1.0 M | 0.1192 | 0.1043 | 0.1162 | 0.1182 | 0.1372 | 0.1355 | 0.1445 | 0.1250 | 0.0143 |
| | 4.0 M | 0.1349 | 0.1112 | 0.1200 | 0.1195 | 0.1002 | 0.1018 | 0.1107 | 0.1140 | 0.0120 |
| Hydrolysis for 24 h | 0.1 M | 0.1075 | 0.1182 | 0.1128 | 0.1135 | 0.1121 | 0.1085 | 0.1165 | 0.1127 | 0.0039 |
| | 1.0 M | 0.0918 | 0.1089 | 0.1293 | 0.0967 | 0.0977 | 0.1267 | 0.0912 | 0.1061 | 0.0161 |
| | 4.0 M | 0.0610 | 0.0702 | 0.0517 | 0.0287 | 0.0504 | 0.0354 | 0.0328 | 0.0472 | 0.0155 |

Table C5 Raw data of weight loss of porous scaffolds at various NaOH concentration

| NaOH | %Weight Loss | | | | | | | | | |
|-------|--------------------|--------|--------|---------|--------|---------------------|---------|---------|---------|--------|
| | Hydrolysis for 6 h | | | | | Hydrolysis for 24 h | | | | |
| | 1 | 2 | 3 | Average | SD | 1 | 2 | 3 | Average | SD |
| 0.1 M | 0.4625 | 0.2601 | 0.3967 | 0.3731 | 0.1032 | 0.6348 | 0.5788 | 0.5940 | 0.6025 | 0.0290 |
| 1.0 M | 0.8218 | 1.0596 | 0.7667 | 0.8827 | 0.1557 | 2.8333 | 2.4293 | 2.4266 | 2.5631 | 0.2340 |
| 4.0 M | 5.0790 | 2.5129 | 3.1337 | 3.5752 | 1.3388 | 40.7611 | 28.5276 | 35.0144 | 34.7677 | 6.1205 |

Table C6 Raw data of water absorption of porous scaffolds with various hydroxyapatite concentration at 1 min

| | HAp | %Water Absorption | | | | | | |
|--------------------|-----|-------------------|----------|----------|----------|----------|----------|---------|
| | | 1 | 2 | 3 | 4 | 5 | Average | SD |
| Nonhydrolysis | 0 | 191.4959 | 183.3850 | 186.8142 | 189.0703 | 183.1833 | 186.7897 | 3.6038 |
| | 20 | 177.6942 | 171.1367 | 158.3397 | 170.4575 | 178.5124 | 171.2281 | 8.0868 |
| | 40 | 147.2521 | 143.7898 | 141.6460 | 140.1093 | 145.1587 | 143.5912 | 2.8198 |
| Hydrolysis for 6h | 0 | 766.8160 | 615.5039 | 704.4487 | 719.8736 | 716.4896 | 704.6264 | 55.1897 |
| | 20 | 500.2708 | 601.2321 | 550.2823 | 582.7807 | 601.2845 | 567.1701 | 42.8031 |
| | 40 | 421.9422 | 412.1734 | 428.7586 | 453.0106 | 457.0130 | 434.5796 | 19.6124 |
| Hydrolysis for 24h | 0 | 818.6308 | 821.3192 | 858.9646 | 798.9189 | 809.2508 | 821.4169 | 22.7584 |
| | 20 | 711.9543 | 783.0729 | 726.9598 | 730.5817 | 792.2201 | 748.9578 | 36.1466 |
| | 40 | 700.8197 | 659.0909 | 709.0851 | 704.8387 | 693.2107 | 693.4090 | 20.0566 |

Table C7 Raw data of water absorption of porous scaffolds with various hydroxyapatite concentration at 3 min

| | HAp | %Water Absorption | | | | | | |
|--------------------|-----|-------------------|----------|----------|----------|----------|----------|---------|
| | | 1 | 2 | 3 | 4 | 5 | Average | SD |
| Nonhydrolysis | 0 | 219.7140 | 214.2709 | 210.2342 | 215.4948 | 204.3857 | 212.8199 | 5.8011 |
| | 20 | 191.6353 | 184.0677 | 176.4280 | 188.1765 | 186.2683 | 185.3152 | 5.6916 |
| | 40 | 166.7219 | 182.4343 | 171.9967 | 153.4878 | 168.6122 | 168.6506 | 10.4262 |
| Hydrolysis for 6h | 0 | 809.1079 | 665.0000 | 751.1025 | 771.4737 | 760.0157 | 751.3400 | 53.0858 |
| | 20 | 626.7434 | 617.2161 | 591.8300 | 651.4318 | 672.2071 | 631.8857 | 31.0402 |
| | 40 | 480.5776 | 428.4047 | 490.0863 | 534.0811 | 536.0332 | 493.8366 | 44.3604 |
| Hydrolysis for 24h | 0 | 843.9207 | 830.6635 | 870.5387 | 814.4505 | 825.7263 | 837.0599 | 21.4968 |
| | 20 | 721.1019 | 785.4911 | 729.7546 | 737.5479 | 801.8596 | 755.1510 | 36.1123 |
| | 40 | 708.2598 | 669.4444 | 717.8503 | 713.8387 | 702.0622 | 702.2911 | 19.3004 |

Table C8 Raw data of water absorption of porous scaffolds with various hydroxyapatite concentration at 5 min

| | HAp | %Water Absorption | | | | | | |
|--------------------|-----|-------------------|----------|----------|----------|----------|----------|---------|
| | | 1 | 2 | 3 | 4 | 5 | Average | SD |
| Nonhydrolysis | 0 | 241.1287 | 232.5750 | 225.7620 | 231.6228 | 218.4432 | 229.9063 | 8.4349 |
| | 20 | 214.9436 | 209.4189 | 205.5217 | 202.8995 | 227.8767 | 212.1321 | 9.9007 |
| | 40 | 178.7075 | 186.3624 | 191.8807 | 159.1098 | 185.0726 | 180.2266 | 12.7002 |
| Hydrolysis for 6h | 0 | 812.5783 | 694.4961 | 767.6209 | 790.3200 | 774.7737 | 767.9578 | 44.5372 |
| | 20 | 663.6425 | 629.3373 | 613.0521 | 677.7317 | 699.3383 | 656.6204 | 35.2221 |
| | 40 | 487.7690 | 434.1579 | 512.0274 | 542.2275 | 543.9352 | 504.0234 | 45.4477 |
| Hydrolysis for 24h | 0 | 844.3696 | 846.2112 | 870.6650 | 819.3874 | 830.9633 | 842.3193 | 19.2202 |
| | 20 | 724.3936 | 789.9554 | 732.8562 | 740.7175 | 805.4649 | 758.6775 | 36.5105 |
| | 40 | 720.6179 | 682.0707 | 730.6782 | 726.7419 | 714.4987 | 714.9215 | 19.3636 |

Table C9 Raw data of compressive modulus of non hydrolyzed porous scaffolds

| HAp | Compressive Modulus (MPa) | | | | | | | | |
|-----|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 0 | 0.1309 | 0.1242 | 0.1296 | 0.1286 | 0.1423 | 0.1363 | 0.1300 | 0.1317 | 0.0059 |
| 20 | 0.2023 | 0.1983 | 0.2131 | 0.1928 | 0.1874 | 0.2061 | 0.2211 | 0.2030 | 0.0116 |
| 40 | 0.2448 | 0.2840 | 0.2750 | 0.3333 | 0.2483 | 0.2647 | 0.2656 | 0.2737 | 0.0297 |

Table C10 Raw data of compressive modulus of porous scaffolds after hydrolyzed for 6 h

| HAp | Compressive Modulus (MPa) | | | | | | | | |
|-----|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 0 | 0.1192 | 0.1043 | 0.1162 | 0.1182 | 0.1372 | 0.1355 | 0.1445 | 0.1250 | 0.0143 |
| 20 | 0.2004 | 0.2158 | 0.1875 | 0.1863 | 0.1798 | 0.1940 | 0.1938 | 0.1939 | 0.0117 |
| 40 | 0.2552 | 0.2591 | 0.2401 | 0.2249 | 0.2052 | 0.2091 | 0.2254 | 0.2313 | 0.0211 |

Table C11 Raw data of compressive modulus of porous scaffolds after hydrolyzed for 24 h

| HAp | Compressive Modulus (MPa) | | | | | | | | |
|-----|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| 0 | 0.0918 | 0.1089 | 0.1293 | 0.0967 | 0.0977 | 0.1267 | 0.0912 | 0.1060 | 0.0161 |
| 20 | 0.1370 | 0.1386 | 0.1200 | 0.1208 | 0.1219 | 0.1237 | 0.1213 | 0.1262 | 0.0080 |
| 40 | 0.1407 | 0.1222 | 0.1247 | 0.1253 | 0.1195 | 0.1428 | 0.1150 | 0.1272 | 0.0106 |

Appendix D The Effect of Ipriflavone on Porous Scaffolds

For the porous scaffolds to study effects of ipriflavone on compressive modulus of the porous scaffolds. Raw data of compressive modulus depended on ipriflavone concentrations and hydrolysis times were shown in Table E1.

Table D1 Raw data of compressive modulus of non hydrolyzed porous scaffolds

| | Compressive Modulus (MPa) | | | | | | | | |
|--------------------|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| PCL | 0.1309 | 0.1242 | 0.1296 | 0.1286 | 0.1423 | 0.1363 | 0.1300 | 0.1317 | 0.0059 |
| PCL+0.25%IP | 0.1274 | 0.0963 | 0.1356 | 0.1247 | 0.1192 | 0.1223 | 0.1209 | 0.1209 | 0.0122 |
| PCL+0.5%IP | 0.1008 | 0.1329 | 0.1195 | 0.1316 | 0.1277 | 0.1169 | 0.1254 | 0.1221 | 0.0111 |
| PCL+40%HAp | 0.2448 | 0.2840 | 0.2750 | 0.3333 | 0.2483 | 0.2647 | 0.2656 | 0.2737 | 0.0297 |
| PCL+40%HAp+0.25%IP | 0.2488 | 0.3204 | 0.3058 | 0.2628 | 0.2614 | 0.2775 | 0.2754 | 0.2789 | 0.0256 |
| PCL+40%HAp+0.5%IP | 0.3239 | 0.2644 | 0.3038 | 0.2493 | 0.2671 | 0.2601 | 0.2671 | 0.2765 | 0.0268 |

Table D2 Raw data of compressive modulus of porous scaffolds after hydrolyzed for 6h

| | Compressive Modulus (MPa) | | | | | | | | |
|--------------------|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| PCL | 0.1192 | 0.1043 | 0.1162 | 0.1182 | 0.1372 | 0.1355 | 0.1445 | 0.1250 | 0.0143 |
| PCL+0.25%IP | 0.1099 | 0.1051 | 0.1215 | 0.1024 | 0.0848 | 0.1230 | 0.1121 | 0.1084 | 0.0130 |
| PCL+0.5%IP | 0.0957 | 0.0909 | 0.0855 | 0.0839 | 0.0838 | 0.1075 | 0.0867 | 0.0906 | 0.0086 |
| PCL+40%HAp | 0.2552 | 0.2591 | 0.2401 | 0.2249 | 0.2052 | 0.2091 | 0.2254 | 0.2313 | 0.0211 |
| PCL+40%HAp+0.25%IP | 0.2198 | 0.2300 | 0.2033 | 0.2089 | 0.1886 | 0.2071 | 0.2112 | 0.2098 | 0.0130 |
| PCL+40%HAp+0.5%IP | 0.1981 | 0.2295 | 0.2191 | 0.1702 | 0.1766 | 0.1740 | 0.1890 | 0.1938 | 0.0231 |

Table D3 Raw data of compressive modulus of porous scaffolds after hydrolyzed for 24h

| | Compressive Modulus (MPa) | | | | | | | | |
|--------------------|---------------------------|--------|--------|--------|--------|--------|--------|---------|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average | SD |
| PCL | 0.0918 | 0.1089 | 0.1293 | 0.0967 | 0.0977 | 0.1267 | 0.0912 | 0.1060 | 0.0161 |
| PCL+0.25%IP | 0.0793 | 0.0810 | 0.0748 | 0.0839 | 0.0838 | 0.1075 | 0.0867 | 0.0853 | 0.0105 |
| PCL+0.5%IP | 0.0767 | 0.0784 | 0.0774 | 0.0943 | 0.0875 | 0.0938 | 0.0829 | 0.0844 | 0.0076 |
| PCL+40%HAp | 0.1407 | 0.1222 | 0.1247 | 0.1253 | 0.1195 | 0.1428 | 0.1150 | 0.1272 | 0.0106 |
| PCL+40%HAp+0.25%IP | 0.0659 | 0.0664 | 0.0675 | 0.0618 | 0.0546 | 0.0368 | 0.0600 | 0.0590 | 0.0108 |

Appendix E The Degradation of Porous Scaffolds

The in vitro degradation of biodegradable polymer/ceramic composites were assessed in two different environments under PBS and *Pseudomonas* lipase conditions. In this study, the variation in HAp composition and hydrolysis times were examined to observe a change in degradation rate. Weight loss, thermal, mechanical and morphological properties change were evaluated.

Table E1 Weight loss of degraded scaffolds in PBS solution at 37°C

| DAY | %Weight Loss | | | | | | | | | | | |
|-----|-----------------------------|---------|---------|---------|---------|---------|--------------------------------------|---------|---------|---------|---------|---------|
| | Hydrolysis times (h) of PCL | | | | | | Hydrolysis times (h) of PCL+40wt%HAp | | | | | |
| | 0 | | 6 | | 24 | | 0 | | 6 | | 24 | |
| | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD |
| 14 | 0.89973 | 0.14301 | 0.68339 | 0.17304 | 0.49454 | 0.05672 | 0.09689 | 0.08655 | 0.40391 | 0.07041 | 1.27390 | 0.42004 |
| 28 | 1.36983 | 0.09122 | 0.55065 | 0.10750 | 0.48714 | 0.39057 | 0.05987 | 0.03443 | 0.83045 | 0.43636 | 1.53015 | 0.19490 |
| 42 | 1.82897 | 0.51248 | 0.67482 | 0.27770 | 0.49270 | 0.24031 | 0.23002 | 0.09556 | 0.48694 | 0.48421 | 1.08135 | 0.13870 |
| 56 | 1.90666 | 0.58238 | 0.95896 | 0.22821 | 0.73812 | 0.15672 | 0.23347 | 0.06464 | 0.19643 | 0.04406 | 0.76965 | 0.14308 |
| 70 | 1.92460 | 0.18481 | 1.09174 | 0.19483 | 1.12561 | 0.08239 | 0.23904 | 0.03490 | 0.49766 | 0.03754 | 1.07744 | 0.14751 |

Table E2 Weight loss of degraded scaffolds in lipase solution at 37°C

| DAY | %Weight Loss | | | | | | | | | | | |
|-----|-----------------------------|---------|---------|---------|---------|---------|--------------------------------------|---------|---------|---------|---------|---------|
| | Hydrolysis times (h) of PCL | | | | | | Hydrolysis times (h) of PCL+40wt%HAp | | | | | |
| | 0 | | 6 | | 24 | | 0 | | 6 | | 24 | |
| | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD |
| 14 | 0.86096 | 0.59063 | 1.01924 | 0.23256 | 1.11197 | 0.10157 | 0.50648 | 0.14862 | 0.39519 | 0.34743 | 1.32252 | 0.17008 |
| 28 | 0.79994 | 0.17707 | 1.15821 | 0.25593 | 1.99914 | 0.51465 | 0.77177 | 0.20248 | 0.96836 | 0.11135 | 1.80164 | 0.02956 |
| 42 | 2.09221 | 0.50162 | 1.16719 | 0.13733 | 1.92957 | 0.38878 | 0.84799 | 0.03701 | 1.53012 | 0.04230 | 1.79062 | 0.29539 |
| 56 | 2.47058 | 0.38798 | 2.32173 | 0.52553 | 2.11526 | 0.05797 | 1.33950 | 0.11732 | 2.20211 | 0.13098 | 2.60704 | 0.35486 |
| 70 | 3.44016 | 0.32309 | 2.41828 | 0.43256 | 2.85187 | 0.30263 | 1.62356 | 0.06026 | 2.22259 | 0.02803 | 2.70777 | 0.12620 |

Table E3 Thermal properties of degraded nonhydrolysis scaffolds

| | Days | Nonhydrolyzed | | | | |
|-------------------------|------|----------------|----------------|----------------|-----------------------------------|----------|
| | | $T_{m,o}$ (°C) | $T_{m,s}$ (°C) | $T_{m,c}$ (°C) | ΔH_f (J.g ⁻¹) | χ_c |
| PCL in PBS | 14 | 64.000 | 55.200 | 27.800 | 58.551 | 41.852 |
| | 28 | 64.500 | 55.200 | 27.800 | 75.453 | 53.934 |
| | 42 | 64.500 | 55.200 | 28.633 | 69.233 | 49.487 |
| | 56 | 65.166 | 55.533 | 29.466 | 70.123 | 50.124 |
| | 70 | 65.333 | 55.700 | 27.800 | 70.585 | 50.454 |
| PCL in Lipase | 14 | 64.333 | 55.533 | 28.300 | 61.186 | 43.924 |
| | 28 | 63.833 | 55.533 | 31.633 | 75.961 | 54.531 |
| | 42 | 63.666 | 55.533 | 28.466 | 54.883 | 39.399 |
| | 56 | 65.666 | 55.700 | 29.633 | 44.476 | 31.928 |
| | 70 | 64.333 | 55.700 | 30.133 | 72.776 | 52.244 |
| PCL+40%HAp in PBS | 14 | 63.833 | 55.033 | 29.633 | 53.483 | 63.990 |
| | 28 | 64.333 | 55.200 | 29.633 | 55.412 | 66.298 |
| | 42 | 64.500 | 55.366 | 29.633 | 52.696 | 63.049 |
| | 56 | 65.500 | 55.533 | 30.466 | 51.702 | 61.859 |
| | 70 | 65.500 | 55.700 | 29.800 | 51.698 | 61.855 |
| PCL+40%HAp in Lipase | 14 | 64.166 | 55.366 | 30.633 | 36.825 | 44.060 |
| | 28 | 64.500 | 55.200 | 29.966 | 39.604 | 47.385 |
| | 42 | 65.000 | 55.700 | 30.133 | 40.342 | 48.268 |
| | 56 | 65.166 | 55.700 | 31.133 | 53.329 | 63.806 |
| | 70 | 65.833 | 55.700 | 29.466 | 61.801 | 73.942 |

Table E4 Thermal properties of degraded scaffolds with hydrolysis for 6h

| | Days | Hydrolyzed 6h | | | | |
|----------------------|------|----------------|----------------|----------------|-----------------------------------|----------|
| | | $T_{m,o}$ (°C) | $T_{m,s}$ (°C) | $T_{m,c}$ (°C) | ΔH_f (J.g ⁻¹) | χ_c |
| PCL in PBS | 14 | 64.333 | 55.533 | 28.966 | 76.797 | 54.894 |
| | 28 | 64.666 | 55.200 | 28.633 | 74.835 | 53.492 |
| | 42 | 65.333 | 55.700 | 29.300 | 72.413 | 51.761 |
| | 56 | 65.666 | 55.366 | 29.800 | 72.374 | 51.733 |
| | 70 | 65.833 | 55.700 | 28.300 | 78.537 | 56.138 |
| PCL in Lipase | 14 | 63.500 | 55.200 | 28.466 | 77.646 | 55.740 |
| | 28 | 64.333 | 55.200 | 27.633 | 74.097 | 53.192 |
| | 42 | 65.000 | 55.700 | 29.133 | 58.172 | 41.760 |
| | 56 | 65.000 | 55.533 | 29.133 | 73.320 | 52.635 |
| | 70 | 65.666 | 55.866 | 29.966 | 78.428 | 56.302 |
| PCL+40%HAp in PBS | 14 | 63.333 | 55.200 | 30.966 | 49.868 | 59.665 |
| | 28 | 64.166 | 55.200 | 29.466 | 49.149 | 58.805 |
| | 42 | 64.000 | 55.366 | 30.633 | 55.456 | 66.351 |
| | 56 | 65.166 | 55.700 | 31.300 | 55.322 | 66.190 |

| | | | | | | |
|-------------------------|----|--------|--------|--------|--------|--------|
| | 70 | 65.166 | 55.700 | 30.466 | 55.214 | 66.061 |
| PCL+40%HAp in Lipase | 14 | 63.500 | 55.366 | 30.633 | 58.786 | 70.335 |
| | 28 | 64.666 | 55.866 | 30.300 | 55.636 | 66.566 |
| | 42 | 65.000 | 55.866 | 30.133 | 56.378 | 67.454 |
| | 56 | 65.500 | 55.866 | 31.466 | 56.614 | 67.736 |
| | 70 | 65.666 | 55.866 | 29.800 | 58.821 | 70.377 |

Table E5 Thermal properties of degraded scaffolds with hydrolysis for 24h

| | Days | Hydrolyzed 24h | | | | |
|-------------------------|------|-----------------------------|-----------------------------|-----------------------------|--|----------|
| | | $T_{m.o}(^{\circ}\text{C})$ | $T_{m.s}(^{\circ}\text{C})$ | $T_{m.c}(^{\circ}\text{C})$ | $\Delta H_f(\text{J}\cdot\text{g}^{-1})$ | χ_c |
| PCL in PBS | 14 | 63.666 | 55.200 | 28.466 | 74.091 | 52.960 |
| | 28 | 64.666 | 55.366 | 27.966 | 77.069 | 55.089 |
| | 42 | 64.666 | 55.366 | 27.966 | 58.637 | 41.914 |
| | 56 | 65.166 | 55.533 | 29.133 | 59.215 | 42.327 |
| | 70 | 66.000 | 55.866 | 29.800 | 78.750 | 56.290 |
| PCL in Lipase | 14 | 63.833 | 55.200 | 28.300 | 76.683 | 55.049 |
| | 28 | 64.666 | 55.366 | 29.133 | 76.734 | 55.085 |
| | 42 | 65.166 | 55.700 | 27.800 | 76.678 | 55.045 |
| | 56 | 65.666 | 55.700 | 29.300 | 75.946 | 54.520 |
| | 70 | 65.833 | 56.033 | 29.300 | 80.304 | 57.648 |
| PCL+40%HAp in PBS | 14 | 63.666 | 55.200 | 30.300 | 51.362 | 61.453 |
| | 28 | 63.833 | 54.866 | 29.633 | 41.597 | 49.769 |
| | 42 | 64.666 | 55.200 | 29.633 | 55.202 | 66.047 |
| | 56 | 65.333 | 55.700 | 30.466 | 54.782 | 65.544 |
| | 70 | 65.833 | 55.700 | 30.300 | 54.521 | 65.232 |
| PCL+40%HAp in Lipase | 14 | 63.500 | 55.200 | 30.133 | 50.441 | 60.351 |
| | 28 | 64.333 | 55.200 | 29.966 | 47.499 | 56.831 |
| | 42 | 64.000 | 55.366 | 29.800 | 45.134 | 54.001 |
| | 56 | 65.333 | 55.533 | 30.800 | 43.440 | 51.974 |
| | 70 | 65.833 | 55.700 | 30.300 | 43.450 | 51.986 |

Table E6 Raw data of compressive modulus of degradable PCL and PCL scaffolds containing HAp in PBS solution

| DAY | Compressive Modulus (MPa) | | | | | | | | | | | |
|-----|-----------------------------|--------|---------|--------|---------|--------|--------------------------------------|--------|---------|--------|---------|--------|
| | Hydrolysis times (h) of PCL | | | | | | Hydrolysis times (h) of PCL+40wt%HAp | | | | | |
| | 0 | | 6 | | 24 | | 0 | | 6 | | 24 | |
| | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD |
| 14 | 0.1313 | 0.0059 | 0.1241 | 0.0143 | 0.1122 | 0.0161 | 0.2711 | 0.0297 | 0.2390 | 0.0211 | 0.1262 | 0.0106 |
| 28 | 0.1251 | 0.0075 | 0.1300 | 0.0075 | 0.1200 | 0.0109 | 0.2710 | 0.0058 | 0.2251 | 0.0107 | 0.1108 | 0.0121 |
| 42 | 0.1241 | 0.0113 | 0.1248 | 0.0098 | 0.1123 | 0.0107 | 0.2681 | 0.0113 | 0.2350 | 0.0104 | 0.1207 | 0.0104 |
| 56 | 0.1306 | 0.0100 | 0.1194 | 0.0106 | 0.1090 | 0.0080 | 0.2702 | 0.0104 | 0.2400 | 0.0087 | 0.1190 | 0.0078 |
| 70 | 0.1198 | 0.0112 | 0.1200 | 0.0072 | 0.1047 | 0.0076 | 0.2694 | 0.0104 | 0.2325 | 0.0102 | 0.1184 | 0.0084 |

Table E7 Raw data of compressive modulus of degradable PCL and PCL scaffolds containing HAp in lipase solution

| DAY | Compressive Modulus (MPa) | | | | | | | | | | | |
|-----|-----------------------------|--------|---------|--------|---------|--------|--------------------------------------|--------|---------|--------|---------|--------|
| | Hydrolysis times (h) of PCL | | | | | | Hydrolysis times (h) of PCL+40wt%HAp | | | | | |
| | 0 | | 6 | | 24 | | 0 | | 6 | | 24 | |
| | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD | Average | SD |
| 14 | 0.1204 | 0.0059 | 0.1209 | 0.0143 | 0.1093 | 0.0161 | 0.2744 | 0.0297 | 0.2310 | 0.0211 | 0.1225 | 0.0106 |
| 28 | 0.1257 | 0.0086 | 0.1209 | 0.0059 | 0.0993 | 0.0091 | 0.2710 | 0.0103 | 0.2307 | 0.0061 | 0.1191 | 0.0092 |
| 42 | 0.1182 | 0.0098 | 0.1175 | 0.0060 | 0.1100 | 0.0096 | 0.2728 | 0.0056 | 0.2247 | 0.0109 | 0.1200 | 0.0110 |
| 56 | 0.1069 | 0.0091 | 0.1103 | 0.0106 | 0.1022 | 0.0076 | 0.2683 | 0.0088 | 0.2201 | 0.0093 | 0.1079 | 0.0099 |
| 70 | 0.1054 | 0.0110 | 0.1085 | 0.0103 | 0.0983 | 0.0083 | 0.2626 | 0.0079 | 0.2196 | 0.0061 | 0.1067 | 0.0067 |

Table E8 The morphology of degradation of PCL scaffolds in PBS

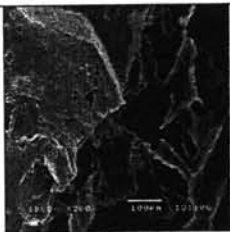
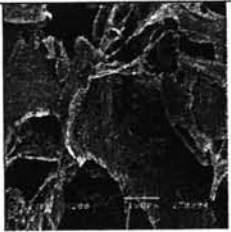
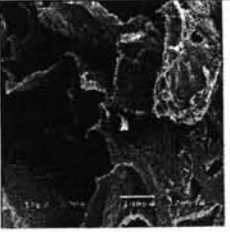
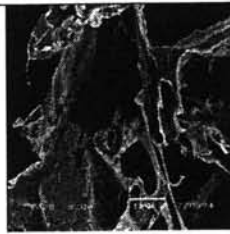
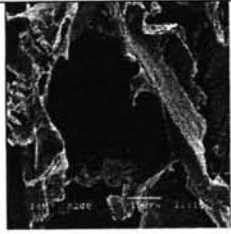
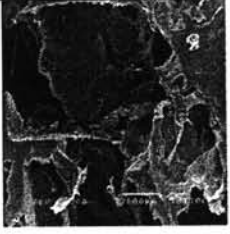
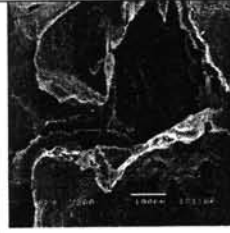
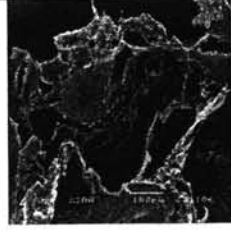
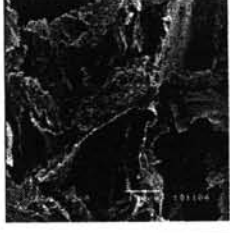
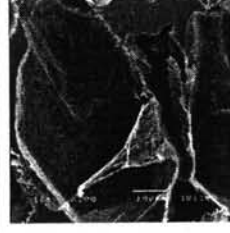
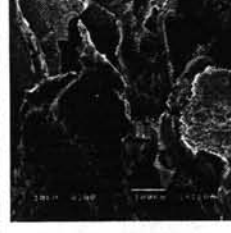
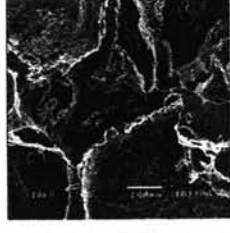
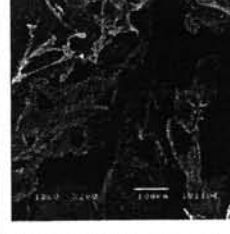
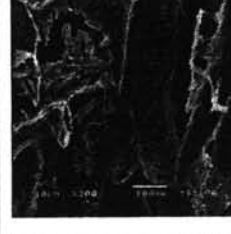
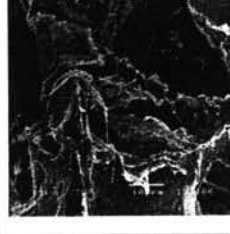
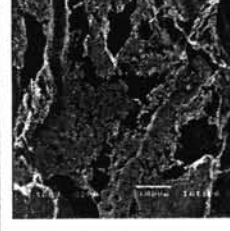
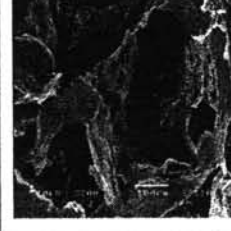

| Degradation Days | Nonhydrolyzed | Hydrolyzed 6 h | Hydrolyzed 24 h |
|------------------|---|--|---|
| 0 |  |  |  |
| 14 |  |  |  |
| 28 |  |  |  |
| 42 |  |  |  |
| 56 |  |  |  |
| 70 |  |  |  |

Table E9 The morphology of degradation of PCL scaffolds containing 40 wt%HAp in PBS


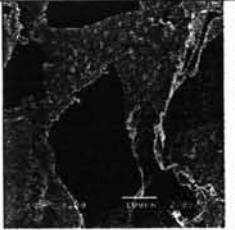
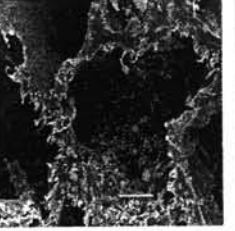
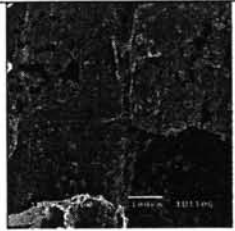
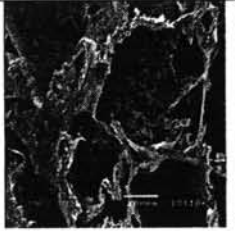
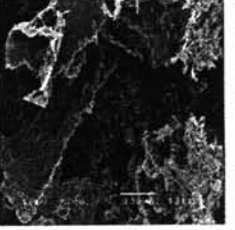
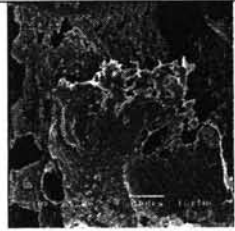
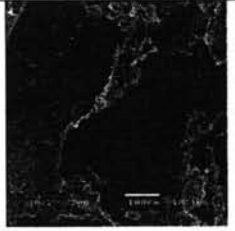
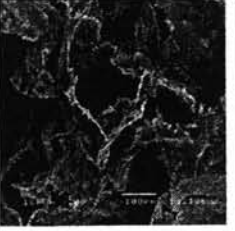
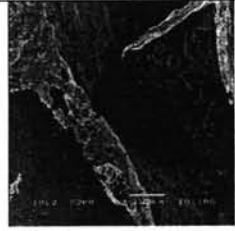
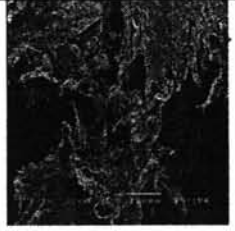

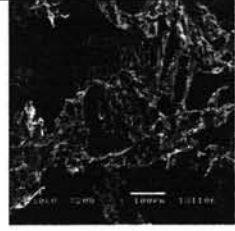
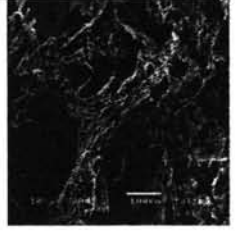
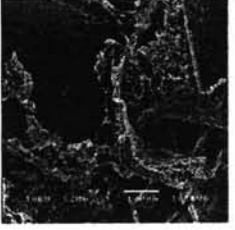
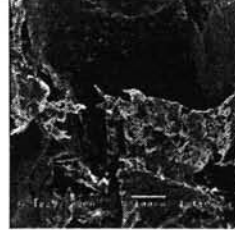
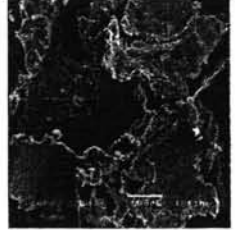

| Degradation Days | Nonhydrolyzed | Hydrolyzed 6 h | Hydrolyzed 24 h |
|------------------|---|--|---|
| 0 |  |  |  |
| 14 |  |  |  |
| 28 |  |  |  |
| 42 |  |  |  |
| 56 |  |  |  |
| 70 |  |  |  |

Table E10 The morphology of degradation of PCL scaffolds in lipase

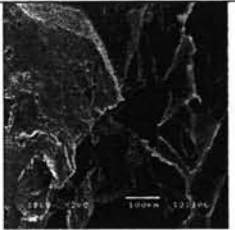
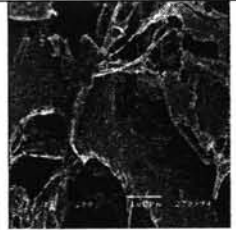
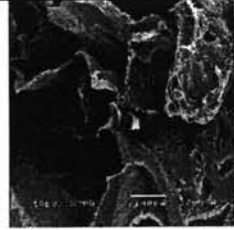
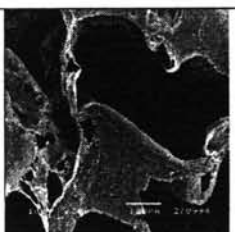
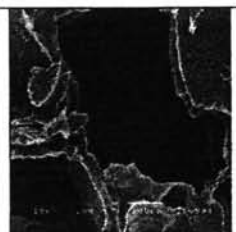
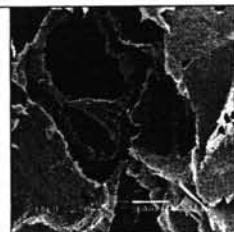
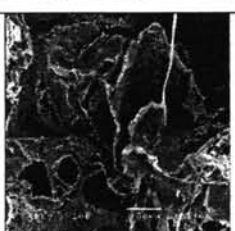
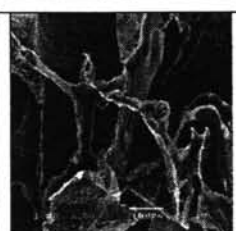
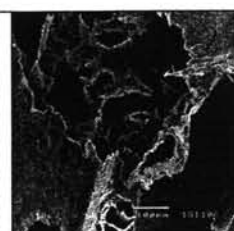

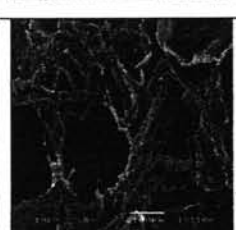
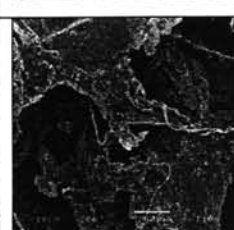
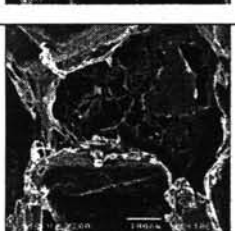
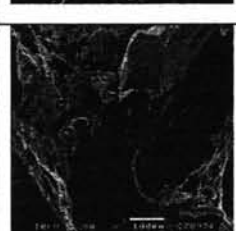
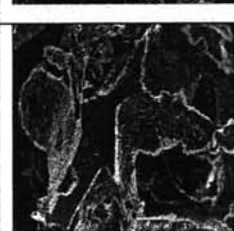
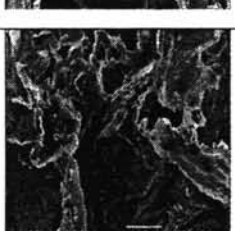

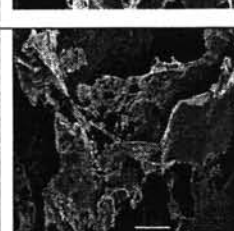
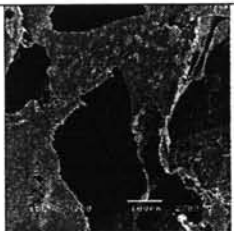

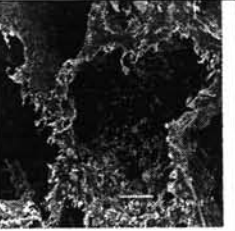
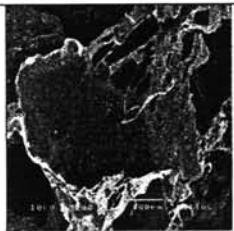
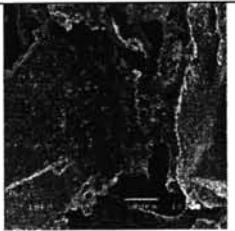

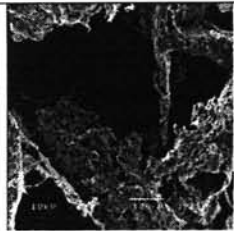
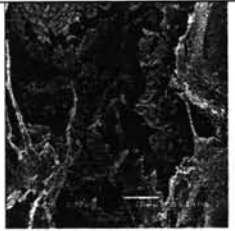
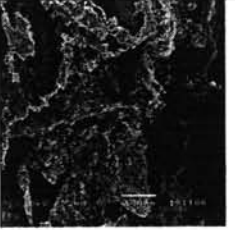
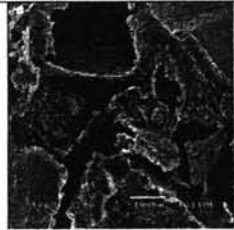
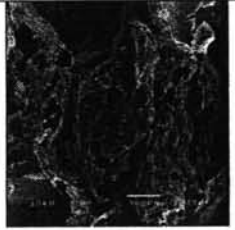

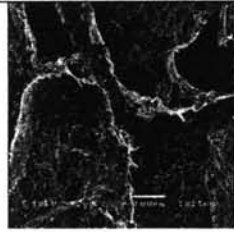


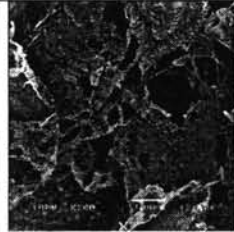
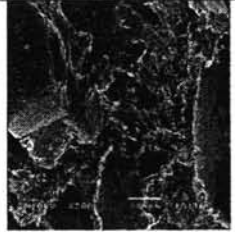
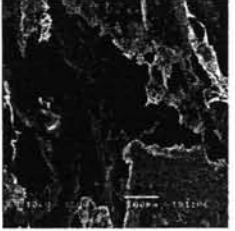
| Degradation Days | Nonhydrolyzed | Hydrolyzed 6 h | Hydrolyzed 24 h |
|------------------|---|--|---|
| 0 |  |  |  |
| 14 |  |  |  |
| 28 |  |  |  |
| 42 |  |  |  |
| 56 |  |  |  |
| 70 |  |  |  |

Table E11 The morphology of degradation of PCL scaffolds containing 40 wt%HAp in lipase

| Degradation Days | Nonhydrolyzed | Hydrolyzed 6 h | Hydrolyzed 24 h |
|------------------|---|--|---|
| 0 |  |  |  |
| 14 |  |  |  |
| 28 |  |  |  |
| 42 |  |  |  |
| 56 |  |  |  |
| 70 |  |  |  |

Appendix F Calculation

F1. Porosity and Density

In this experiment, porosity and density of the porous scaffolds were characterized by using liquid displacement method.

For example

The sample weight of 0.3374 g is immersed in the ethanol (20 ml). The total volume of ethanol impregnated scaffold is 20.5 ml. The ethanol impregnated scaffold is then removed from the ethanol and the residual ethanol volume is 17.2 ml. Hence, the porosity and density can be determined using the following equation:

$$\begin{aligned} \text{Porosity (\%)} &= \frac{(V_1 - V_3)}{(V_2 - V_3)} \times 100\% = \frac{(20.0 - 17.2)}{(20.5 - 17.2)} \times 100\% \\ &= 84.85\% \\ \text{Density (g/cm}^3\text{)} &= \frac{W}{(V_2 - V_3)} = \frac{0.3374}{(20.5 - 17.2)} \\ &= 0.1022 \text{ g/cm}^3 \end{aligned}$$

F2. Water Absorption

In this experiment, water absorption of the porous scaffolds were characterized at 1, 3 and 5 min.

For example

The sample weight of 0.3073 g is placed in the water for 1 min. The scaffold is then removed and the weight of the scaffold is 2.0545 g. Therefore, the water absorption can be calculated using the following equation:

$$\begin{aligned} \text{Water Absorption (\%)} &= \frac{(M_{wet} - M_{dry})}{M_{dry}} \times 100\% \\ &= \frac{(2.0545 - 0.3073)}{0.3073} \times 100\% \\ &= 568.5649\% \end{aligned}$$

F3. Weight Loss

In biodegradable test, the porous scaffolds were immersed in PBS and lipase solution to determine the biodegradation rate of sample.

For example

The sample weight of 0.3073 g is soaked in lipase solution for 14 days. The scaffold is then removed and the dry weight of the scaffold is 0.2000 g. Hence, the weight loss can be calculated using the following equation:

$$\begin{aligned}\text{Weight Loss (\%)} &= \frac{(M_{\text{initial}} - M_{\text{end}})}{M_{\text{initial}}} \times 100\% \\ &= \frac{(0.3073 - 0.2000)}{0.2000} \times 100\% \\ &= 34.9170\%\end{aligned}$$

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