

Effect of different hemisphere shape pore size and depth on cellular behavior

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Surface morphology of cell culture substrate is well known as an important factor for determining cellular behaviors and their fate. There have been many attempts to figure out the influences of surface morphologies. However, there was no research studying the influence of different pore size and depth on the cellular behavior. In this study, different size and depth pores are fabricated on PDMS surface by leaching out polystyrene particles fabricated by SPG membrane which have a uniform size. A PDMS surface after polystyrene particles are leached out has uniform crater shape pores. In addition to the uniformity of pore size, we controlled the pore size on PDMS substrate by using different size polystyrene particle. Add to the different pore size, different depth of pore can be achieved by controlling PDMS pre-curing method. We studied the cellular behavior by culturing 3T3 on our substrate. The result demonstrates that smaller and deeper pore inhibits cell adhesion. Our substrate can be further used for studying the cellular behavior of different cell types and the differentiation of stem cells.