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Sample	RMS Roughness (Rq) $(nm) \pm SD$		Average Roughness (Ra) (nm)±SD	
	Pattern	Plane	Pattern	Plane
SF	33.43 ±0.21	.64 ±0.00	29.33 ±0.21	.49 ±0.03
SF/0.1%H	35.36 ±2.54	.67 ±0.04	31.43 ±0.89	.51 ±0.03
SF/0.4%H	38.30 ±0.57	.79 ±0.05	34.73 ±0.42	.61 ±0.10
SF/1.0%H	41.20 ±0.35	.82 ±0.03	36.60 ±0.56	.60 ±0.01
SF/2.0%H	48.46 ±0.07	.95 ±0.01	44.80 ±0.42	.73 ±0.04

Table S1: Surface roughness of flat as well as nano patterned SF and HSF membranes



Figure S1: MTT assay of 3T3 fibroblast cells cultured on flat SF and HSF membranes for 2, 4 and 6 days.



Figure S2: MTT assay of 3T3 fibroblast cells cultured on (a) patterned ,and (b) SF and HSF membranes for 2, 4 and 6 days.



Figure S3: Stress-Strain curve of Patterned SF and HSF membranes.

Estimation of Protein Release and Carbohydrate Release from Patterned membranes in culture matrix

For estimation of protein release and carbohydrate release from membranes, Bradford Assay and Phenol-Sulfuric Acid test was conducted, respectively. The membranes were immersed in 1 ml complete DMEM media in triplicate and incubated at 37 °C (5 % CO₂). The leached out protein and carbohydrate from membranes over the period of 1, 4, 12 and 24 hrs were measured at 595 nm and 490 nm, respectively. It was observed that the maximum release of protein have taken place during the initial 1-4 hr and decreased gradually after period of time. This is due to the leaching of un-crosslinked protein from the blended membranes. Similarly, we found that leaching of carbohydrate from membranes were also increased upto 4 hrs and after that leaching of carbohydrate decreased. The protein components leached out from the membranes during culturing helps in better adhesion of cells to the surface of substrate. Whereas, carbohydrate component from membranes acts as a nutritional factor to the cells during culture environment and enhances the cellular activity and growth rate of cells.



Figure S4. Components release from patterned SF membranes of different honey dilutions over a period of time. (a) Protein release, and (b) Carbohydrate release.