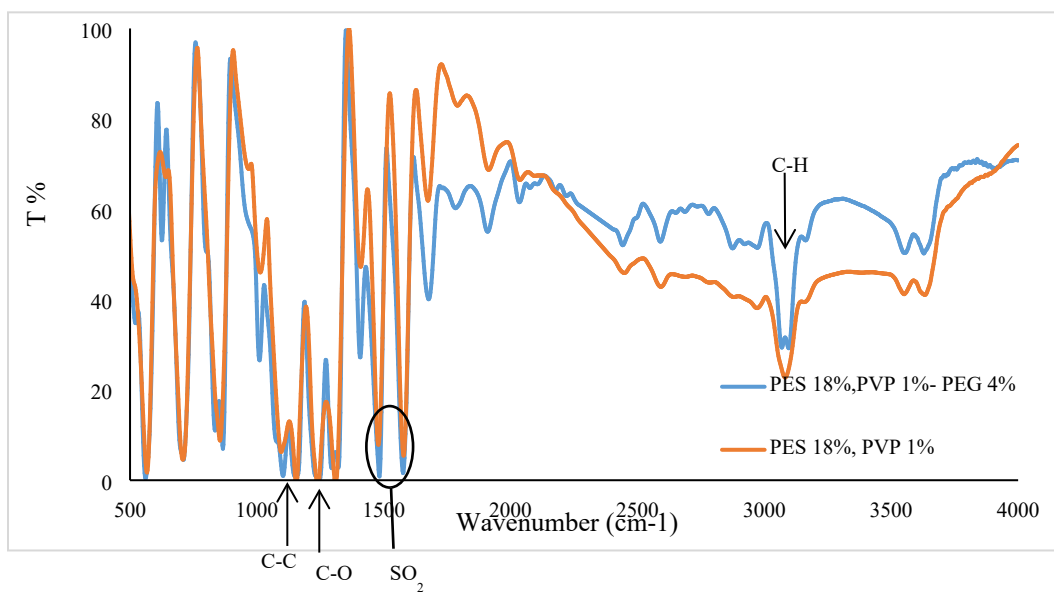


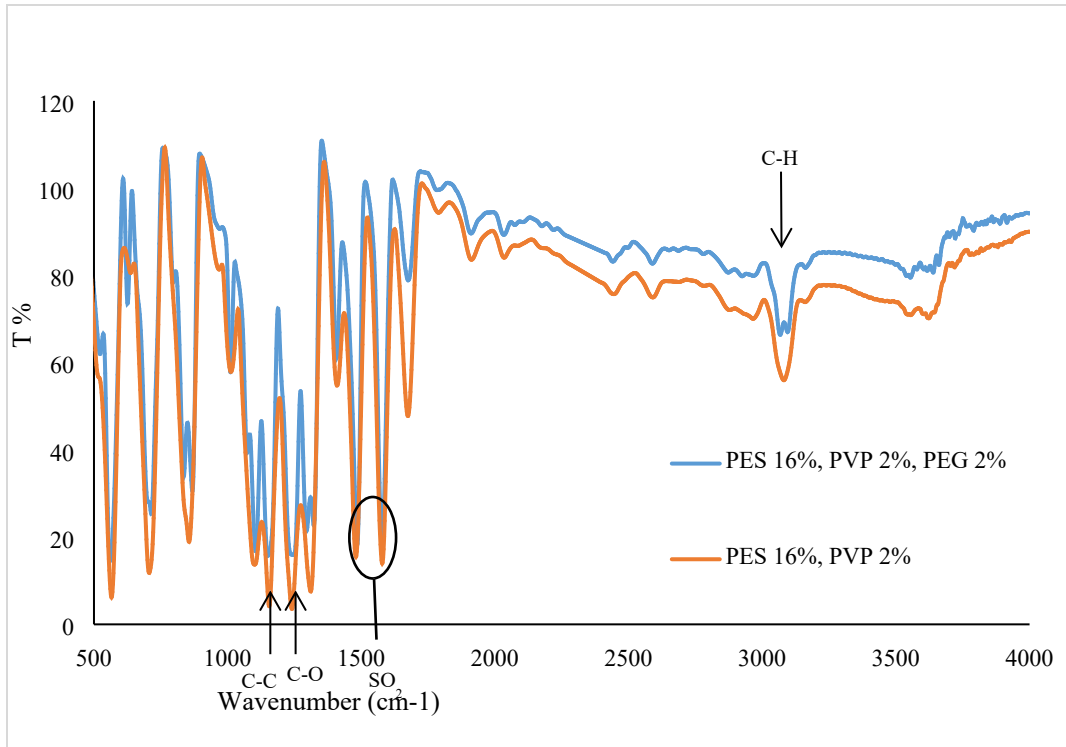
Supplementary

A Thin Disc-Shaped Macrocapsule for Transplantation of Oxygen Carriers- Laden Alginate Hydrogel- Encapsulated Pancreatic islets in Diabetic Mice

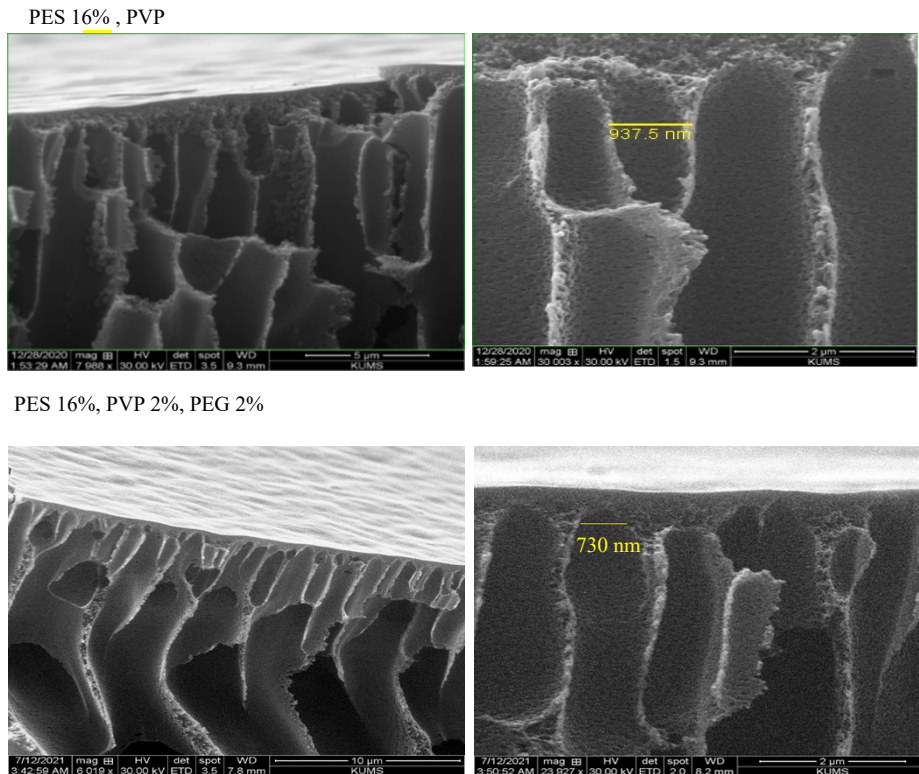
A)



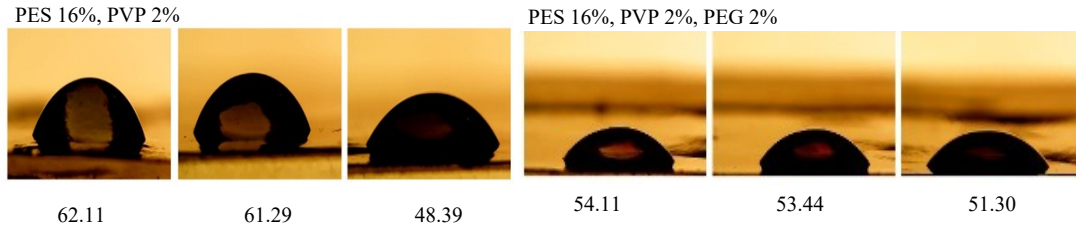
B)



S1: FT-IR Spectra of M1, M2, M3 and M4: Chemical identification of PES thin membranes before and after modification with the FT-IR spectroscopy were performed in the range of wavenumber 600- 4000 cm^{-1} a) Comparison of FT-IR spectra of M1(PES 18%, PVP 1%) and M2 (PES 18%, PVP 1%, PEG 4%) thin membrane, which show common functional groups in both spectra b) Comparison of FT-IR spectra of M3 (PES 16%, PVP 2%) and M4 (PES 16%, PVP 2%, PEG 2%) thin membrane, which show common functional groups in both spectra



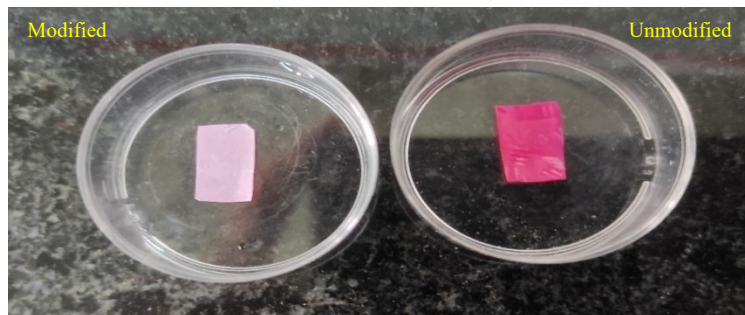
S2: Scanning Electron Microscopy of M3 and M4: The morphological changes of the prepared M3 and M4 thin membranes were observed by scanning electron microscopy. To improve the resolution of the cross-sectional image, thin-membranes were immersed in liquid nitrogen for 1 minute at room temperature and then broken. Cross-sectional and surface of members coated with a thin layer of gold/palladium to minimize electrical charge.



S3: Comparison of the Contact Angles of M3 and M4 Thin Membranes. The hydrophilicity properties of modified and unmodified thin membranes are determined by measuring the contact angle between the surface of the thin-membrane and the water drop (5- 25 μ L) using the sessile drop method. The contact angle is reduced in M4 thin membrane.

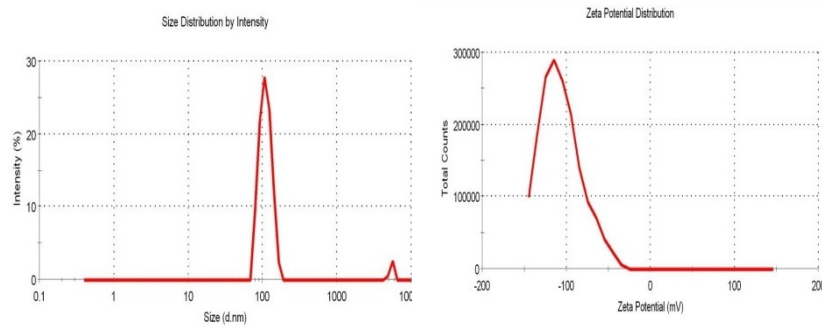
S4. Mechanical properties of M1, M2, M3 and M4 membranes

Membrane	Tensile stress at break (MPa)	Elongation at break (%)
PES 16%, PVP 2%	2.47	3.97
PES 16%, PVP2%, PEG 2%	1.86	2.86
PES 18%, PVP1%	4.48	13.5
PES 18%,PVP 1%, PEG 4%	2.72	4.55



S5. Evaluation of Protein Absorption on the Macrocapsule Surface: M1 and M2 thin membranes were examined by the Ponceau S staining method in order to study their protein absorption properties. A thin membrane with dimensions of 0.5cm \times 0.5cm was immersed in protein solution containing serum albumin (BSA) with a concentration of 10 mg/mL for 1 hour and then immersed in 2% SDS solution in a shaker incubator for 30 min. In the following,

drops of Ponceau S 5% stained solution were poured on the thin membrane and, after 1 min, washed three times with distilled water. The color difference was observed in both M1 and M2 thin membranes.



S6 .Dynamic Light Scattering (DLS): The hydrodynamic diameters, zeta potentials, and polydispersity of PFOB emulsion were determined by dynamic light scattering (DLS). For preparation, PFOB emulsion was sonicated for 30 minutes with a probe sonicator (Hielscher, UP 100 H).