

Supervised Learning for Predictive Pore Size Classification of Regenerated Cellulose Membranes Based on Atomic Force Microscopy Measurements

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Shown below is an accuracy error of 1.5 nm associated with the calibration block. The manufacturer rating of the block is set 20 ± 1.5 nm.



Figure S1. AFM scan corresponding to the calibration block. The step height for the calibration standard was measured to be 21.4 ± 1.5 nm and a period (pitch) of $3 \mu\text{m} \pm 0.01 \mu\text{m}$.

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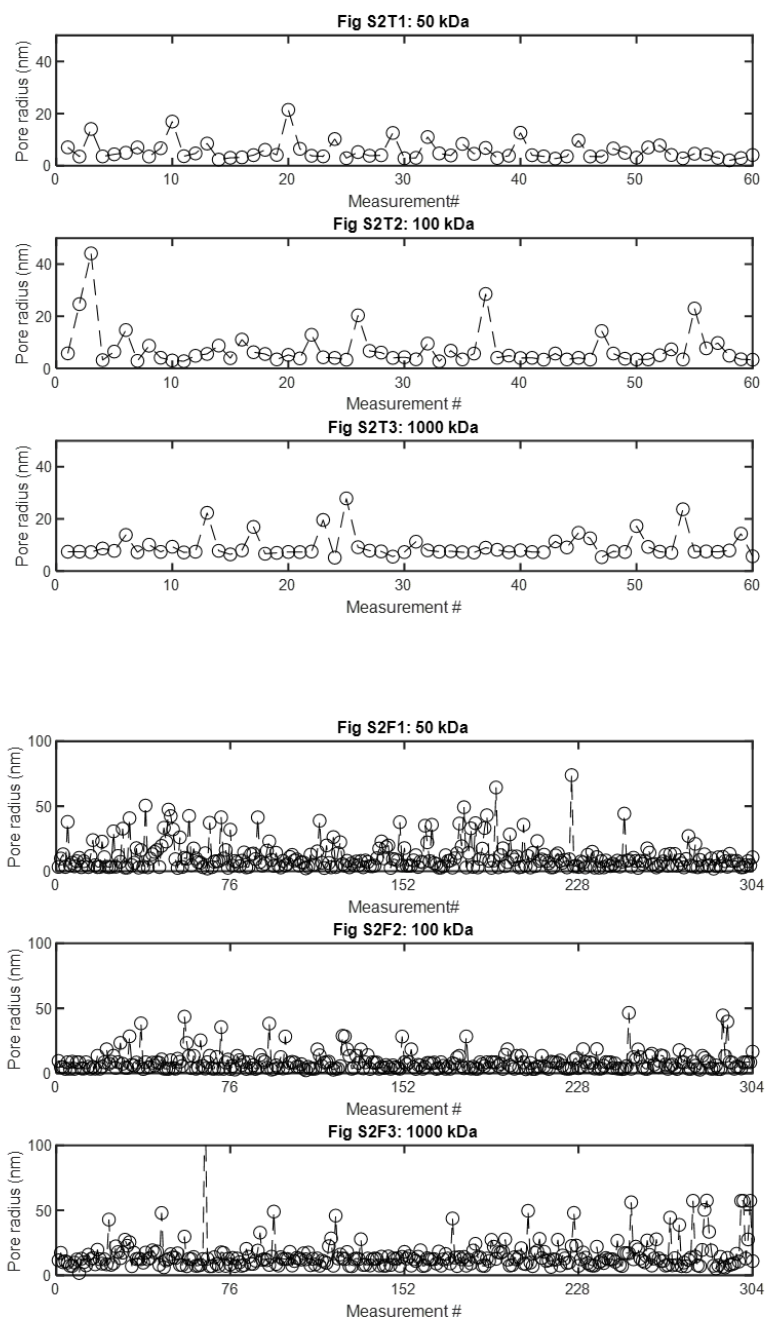


Figure S2. (A) Raw data for AFM pore size captured (T1–T3 tapping mode; F1–F3 fluid mode) chronologically across the examined sections (5 sections for tapping mode, 4 sections for fluid mode) showing random spikes across all 3 examined RC membranes. This data was subjected to the Fourier analysis for the detection of periodic instrument and environmental drifts ruled out due to poor adjusted correlation coefficients ($R_{adj}^2 < 1$). Results are summarized in Table 3.

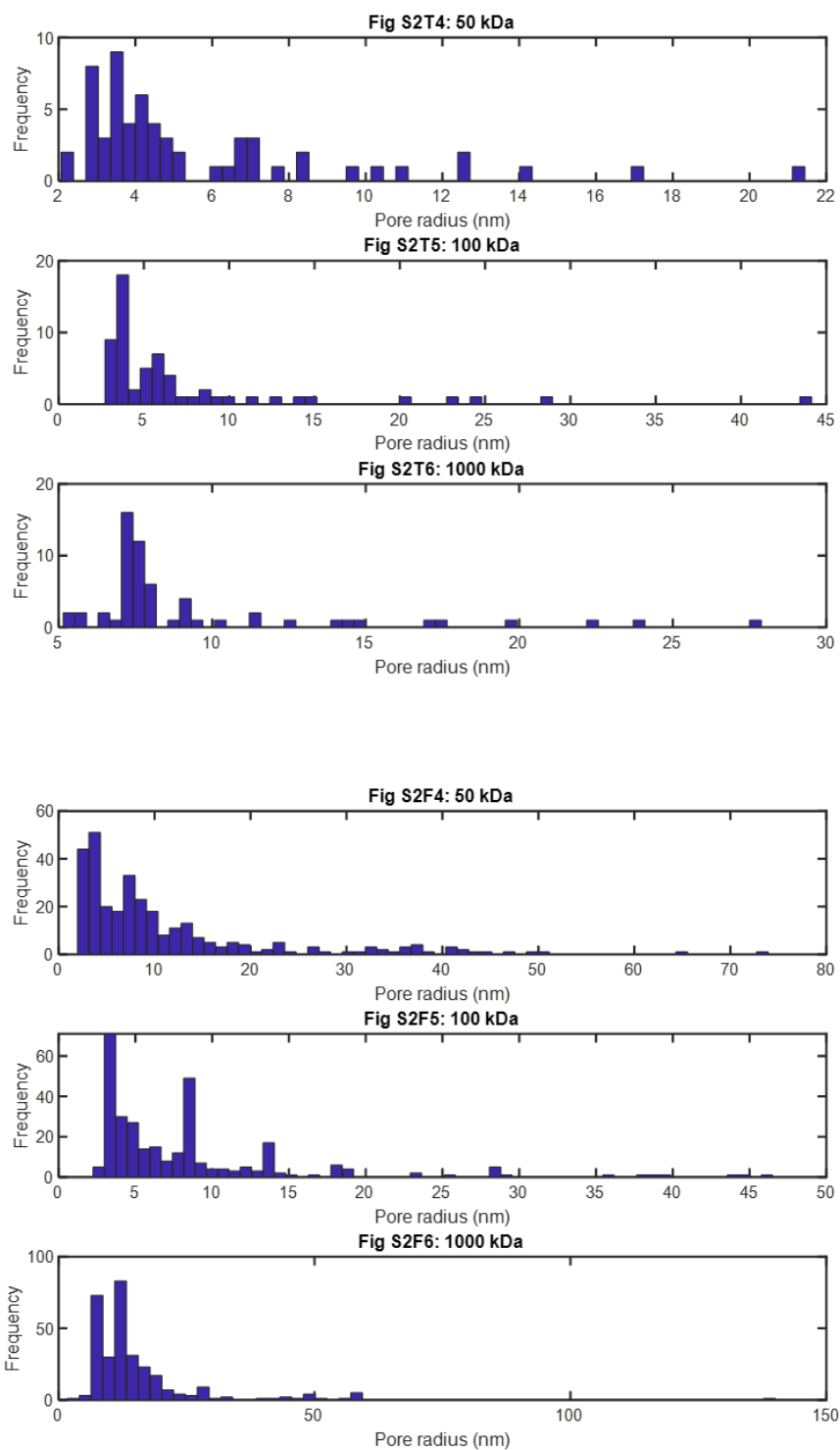


Figure S2. (B) Pore size frequency distribution (T4–T6 tapping mode; F4–F6 fluid mode) indicative of lack of Normality.

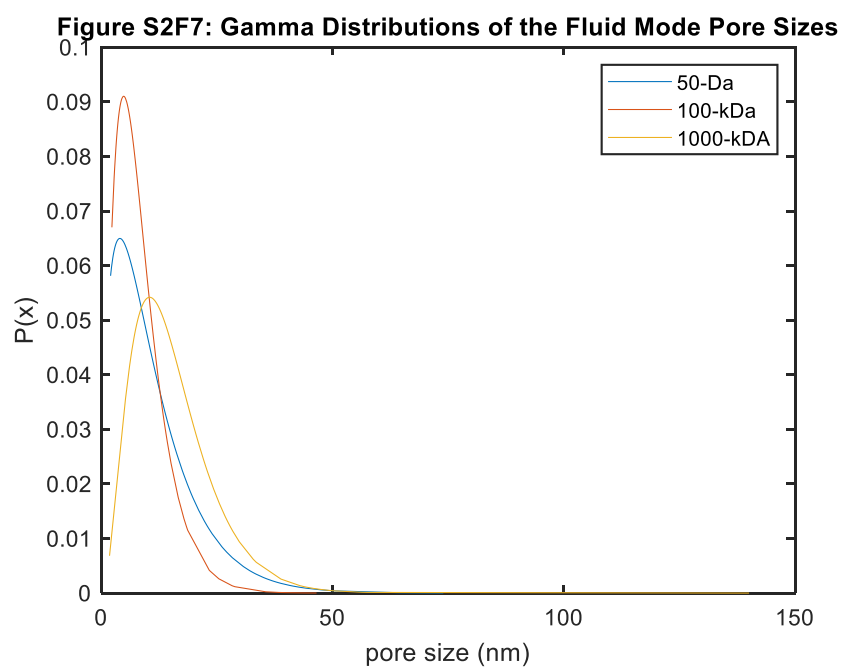
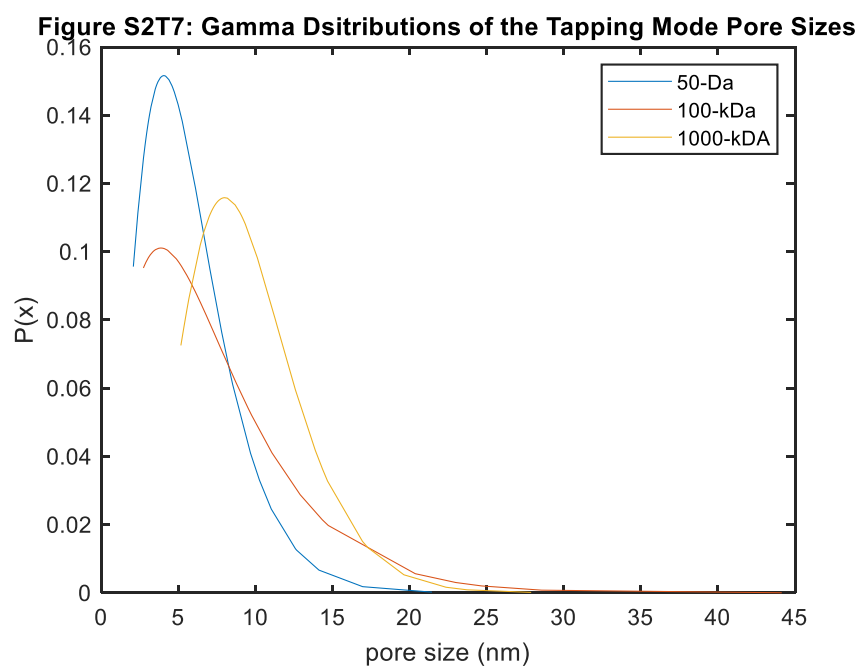


Figure S2. (C) Raw datasets fitted Gamma Distributions (Figure S2T7 tapping mode; Figure S2F7 fluid mode).

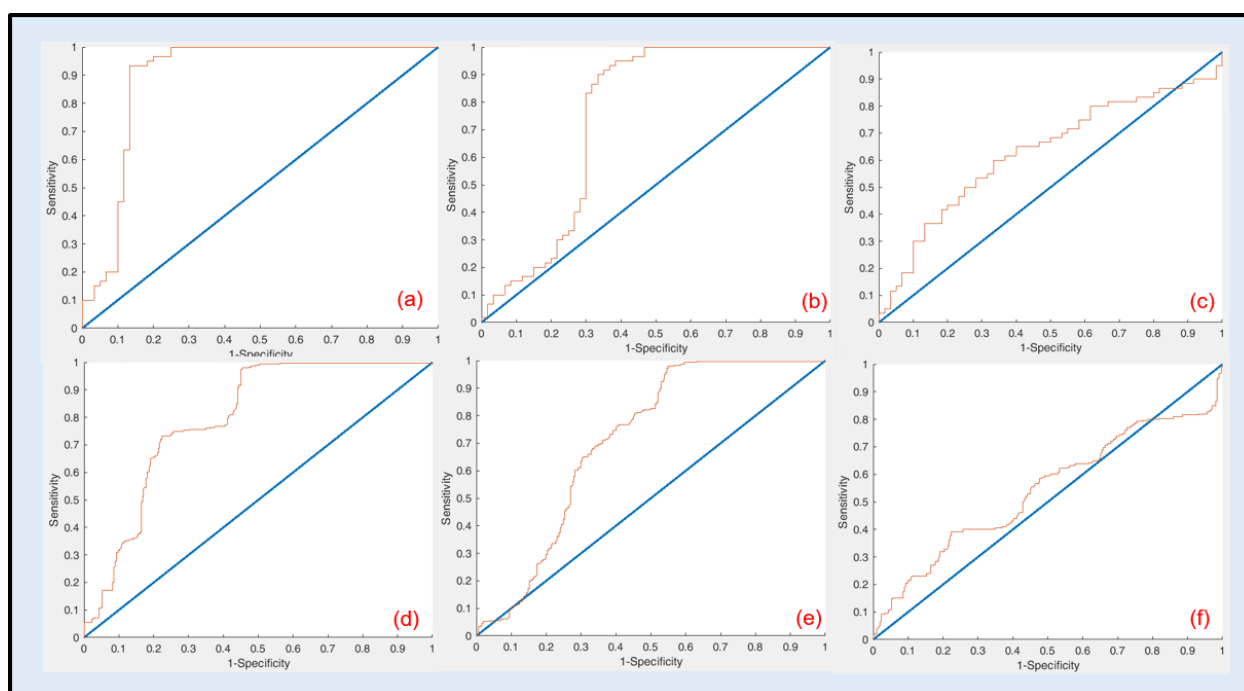


Figure S3. Receiver operating curves applied to the raw datasets. Top and bottom rows correspond to tapping and fluid modes, respectively: (a, d) 100 kDa vs 1000 kDa in tapping and fluid modes; (b, e) 50 kDa vs 1000 kDa in tapping and fluid modes; (c, f) 50 kDa vs 100 kDa in tapping and fluid modes. Corresponding AUCs are presented in Table 7.