WB902-319

Salinity Independent Multiphase Fraction Metering for Oil and Gas Industry using Microwave Sensors

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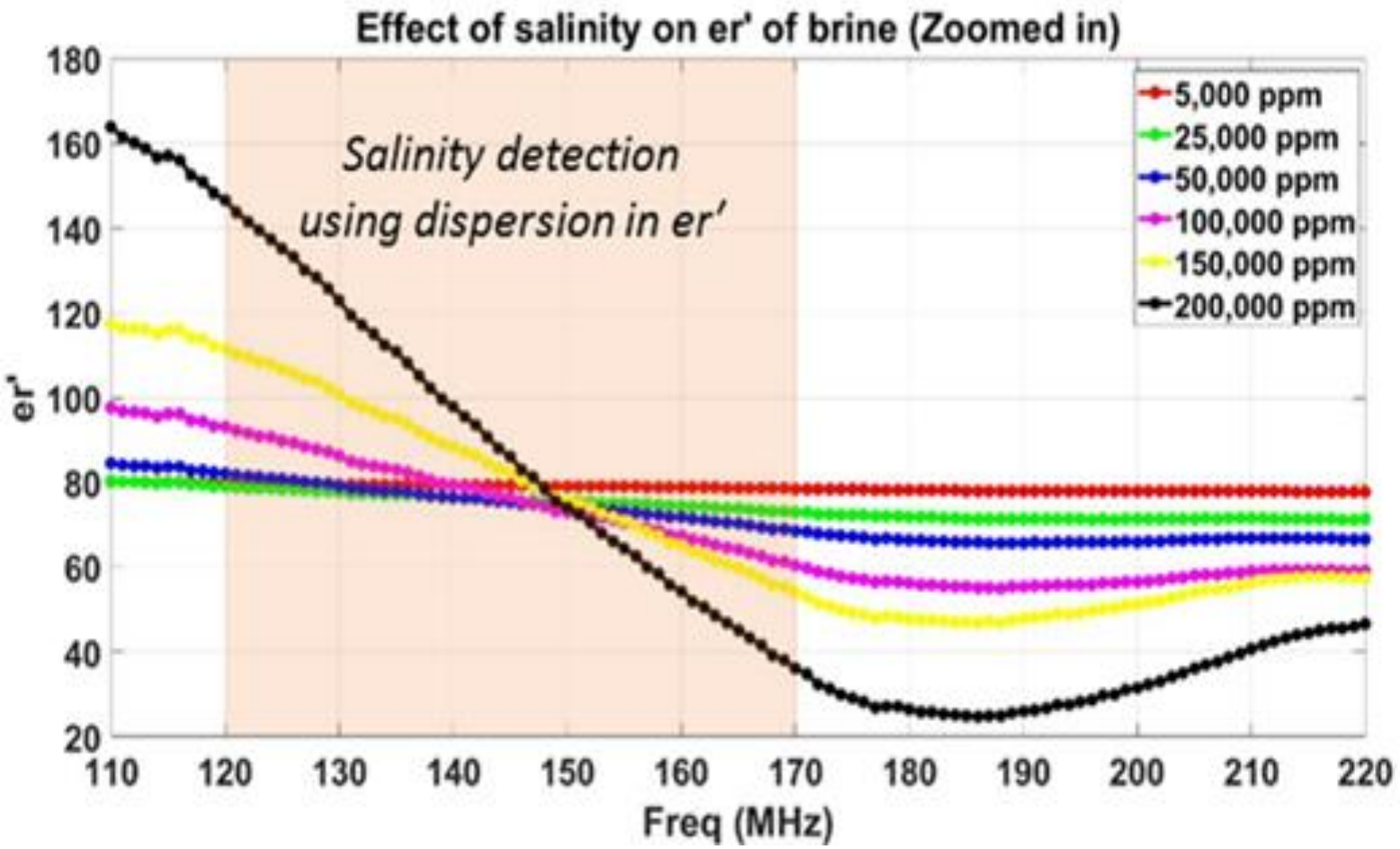
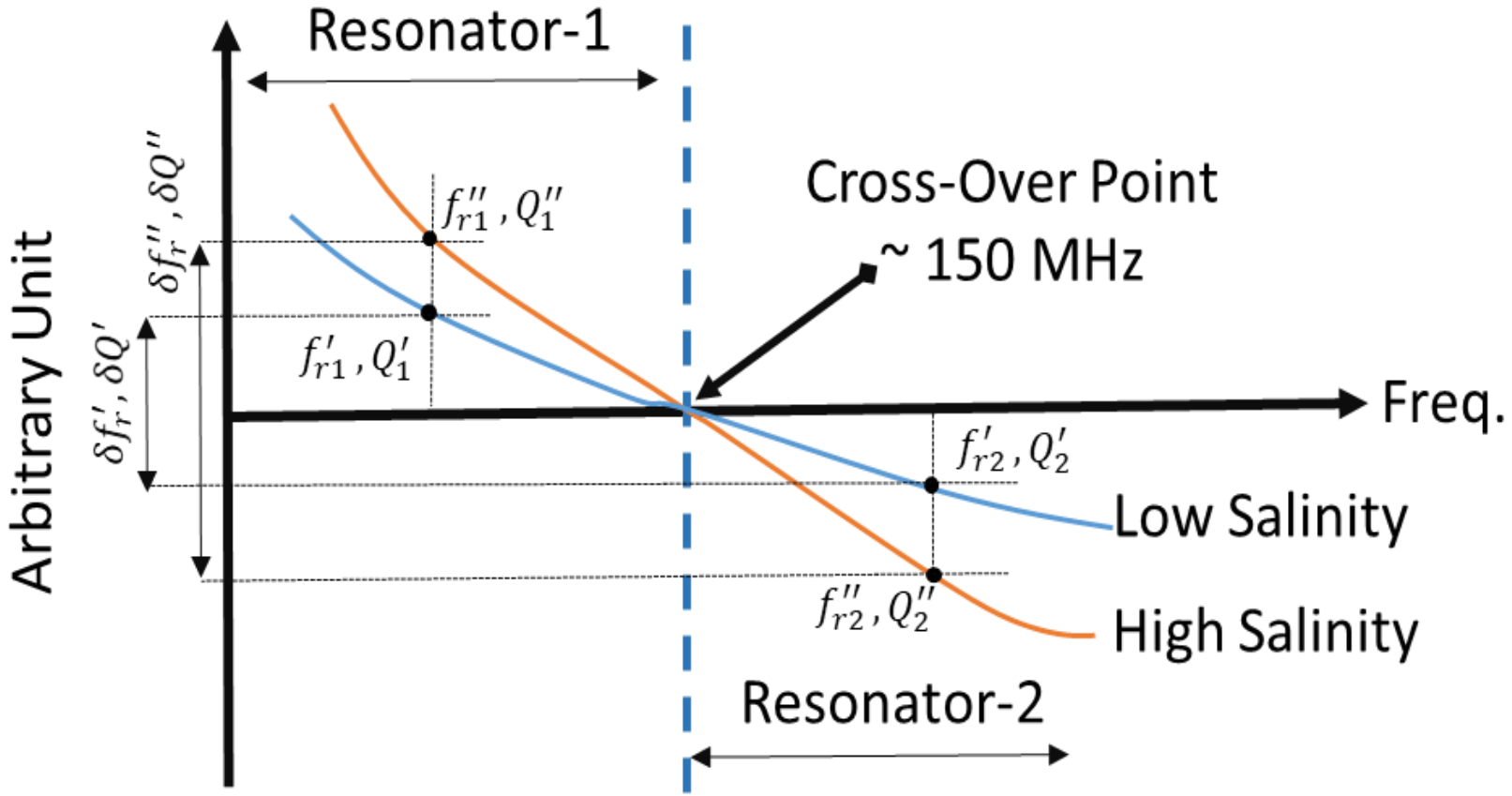
Outline

- Introduction / Motivation / Problems or Challenges
- Effect of Salinity on Dielectric Measurement
- Sensor Design Approach
- Industrial Flow Loop/ Laboratory Static Tests
- Outcome of Research and Conclusions
- Feedback/Comments/ Queries

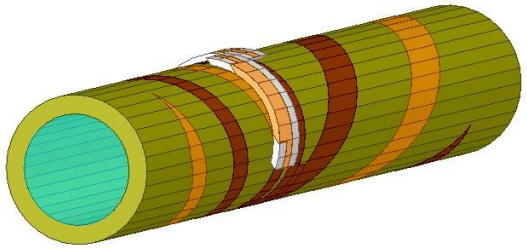
Problems or Challenges

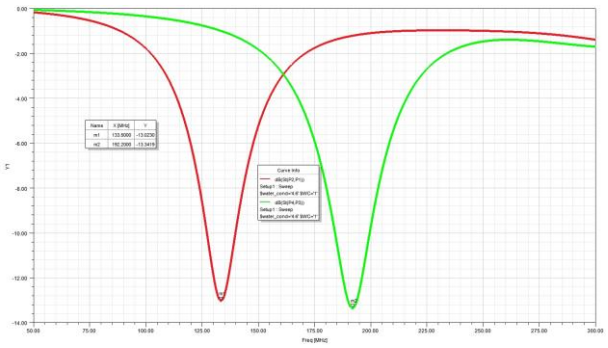


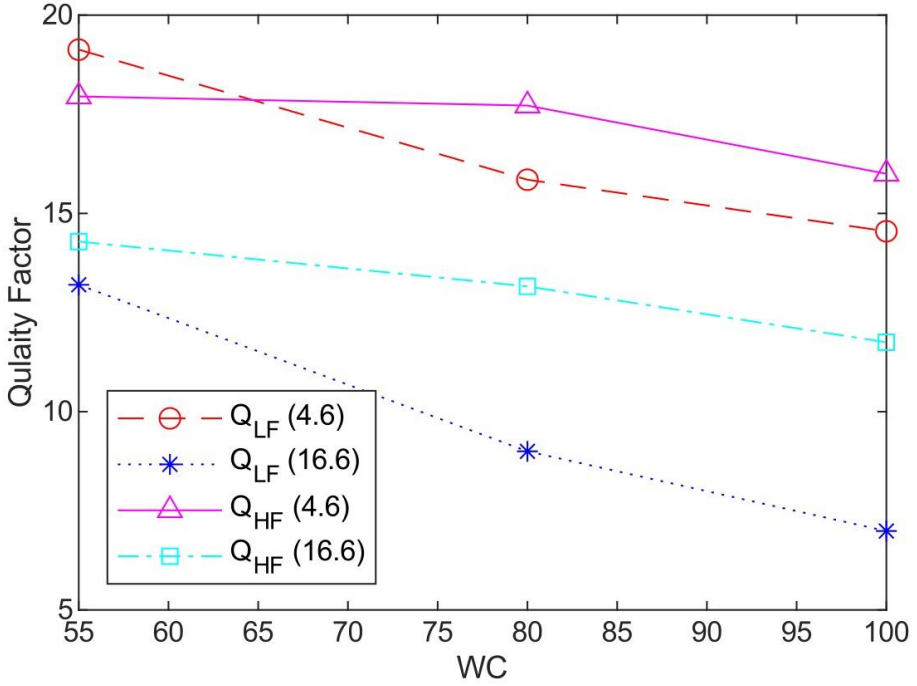
Sensor Design Approach

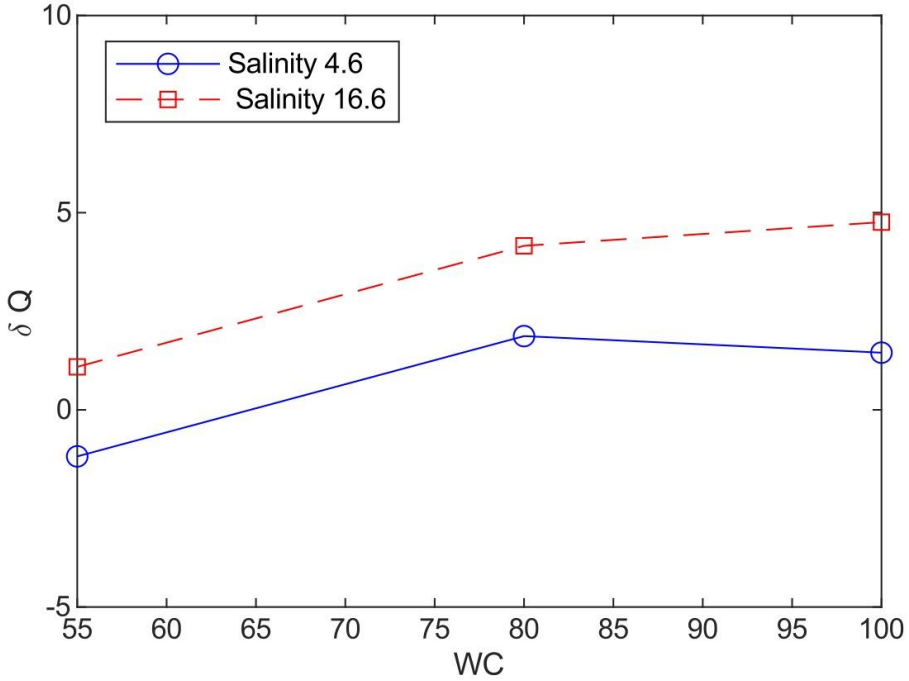


Simulations

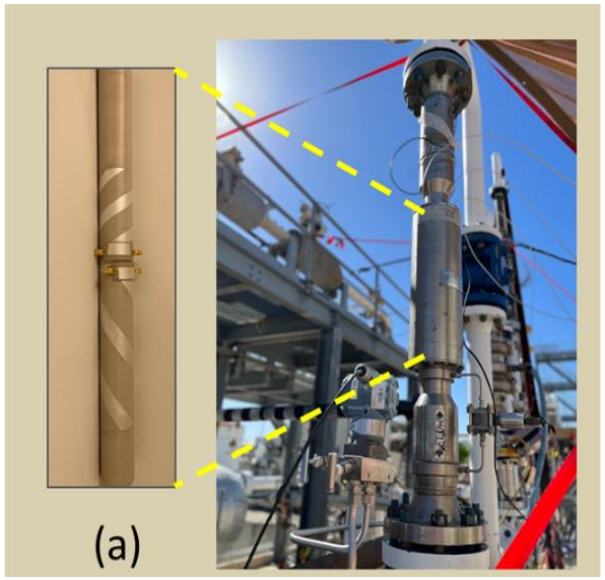


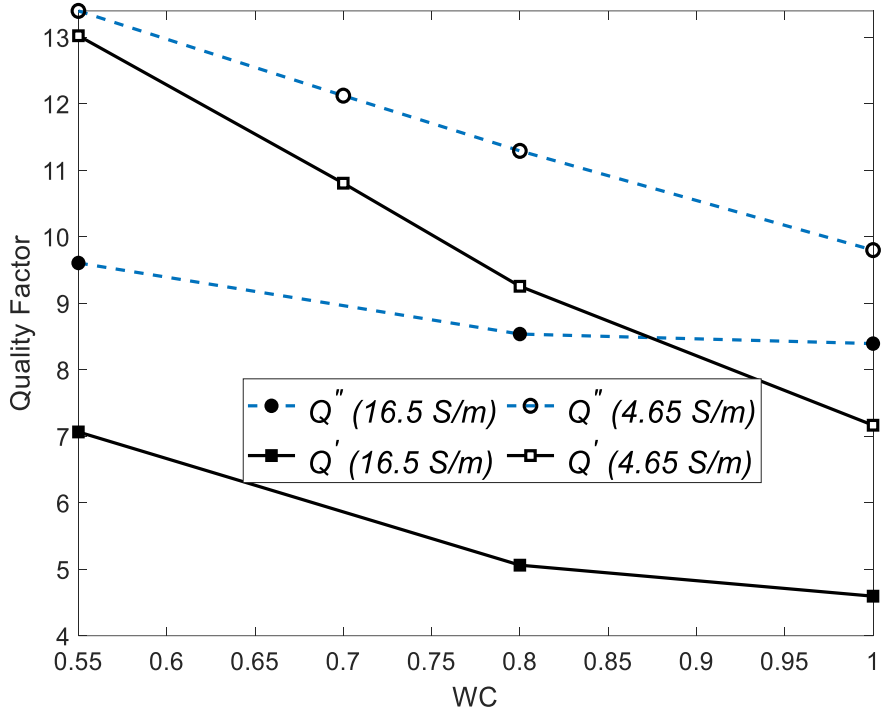


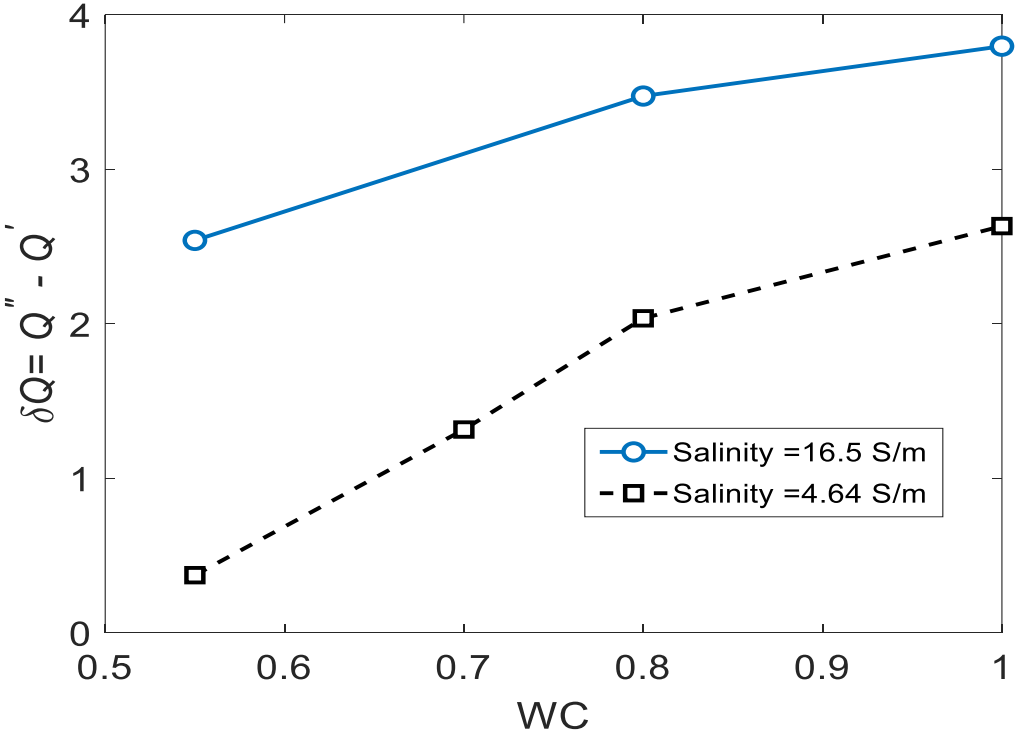




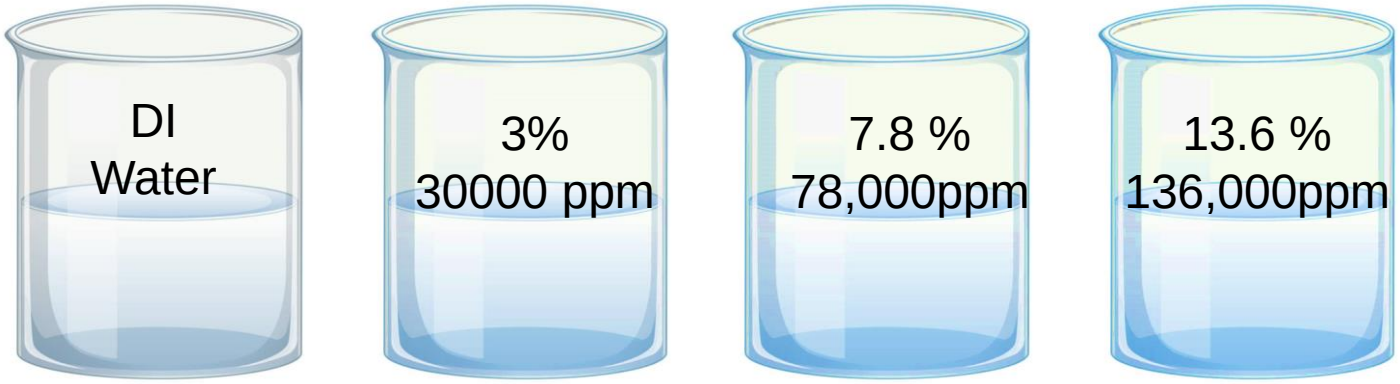
Industrial Flow Loop Tests

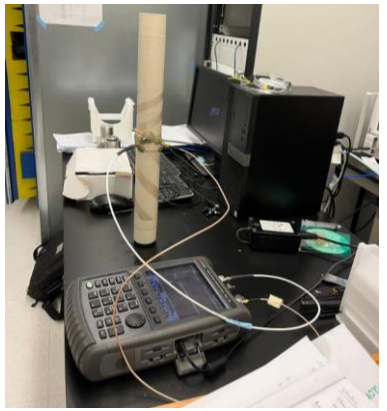


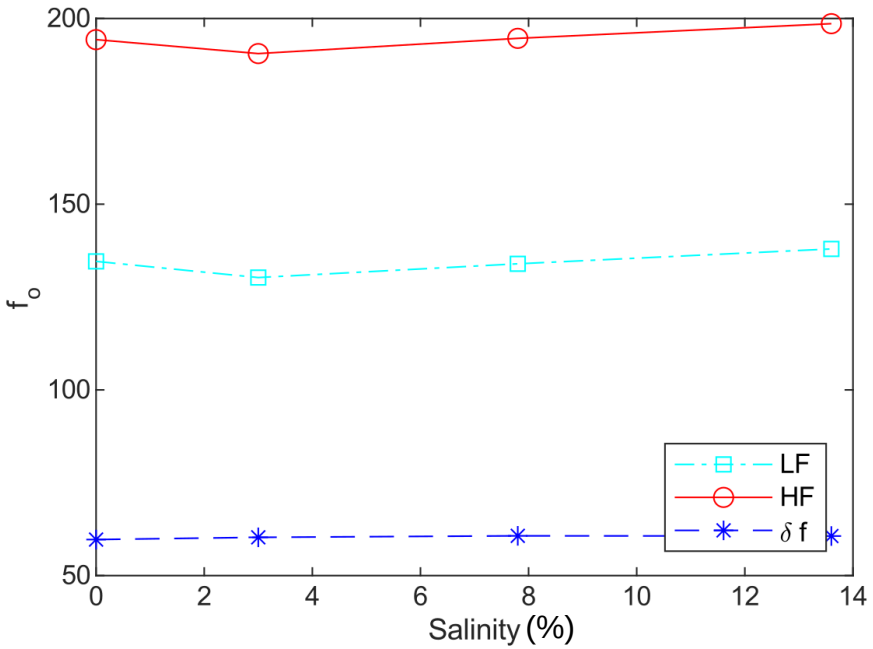


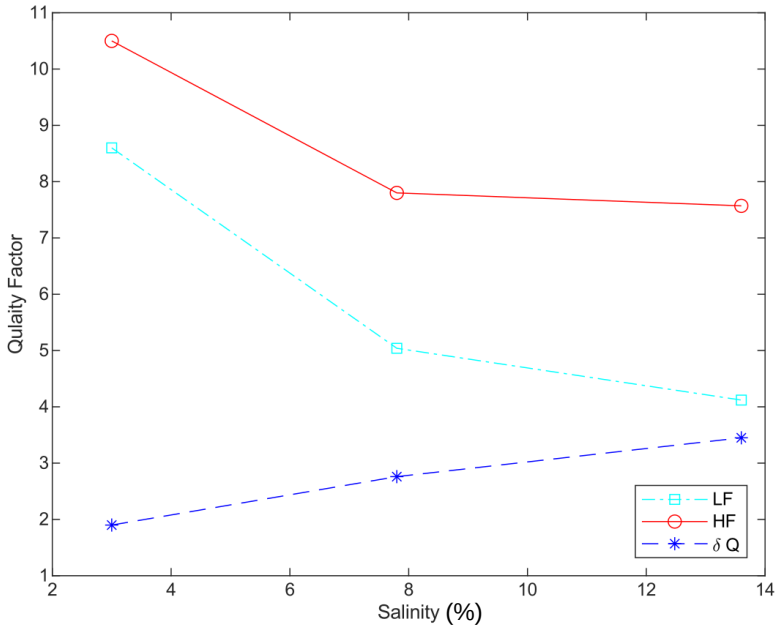


Laboratory Static Tests

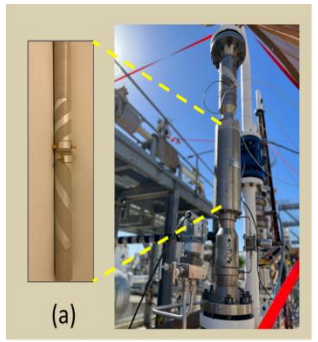


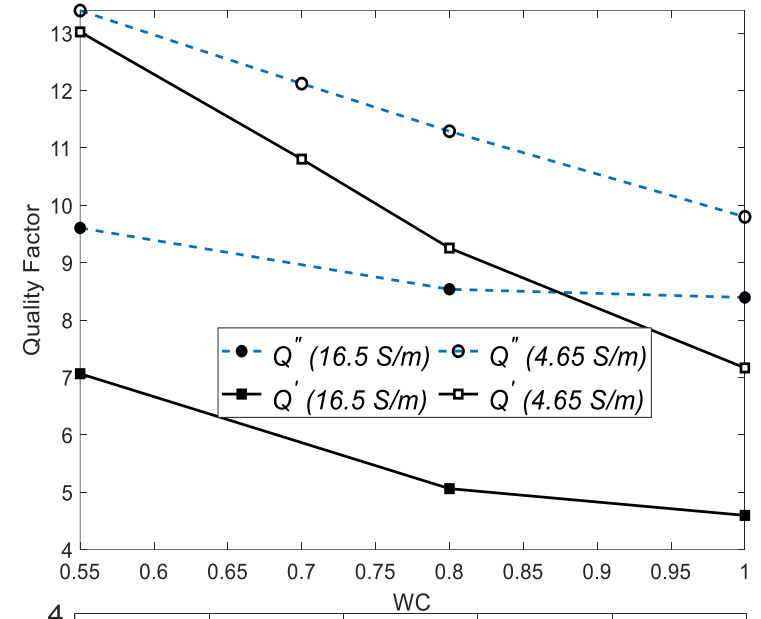


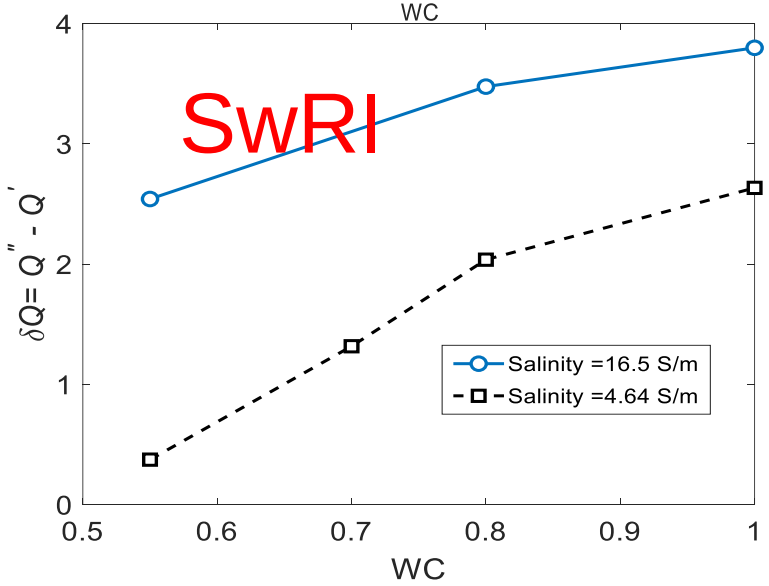


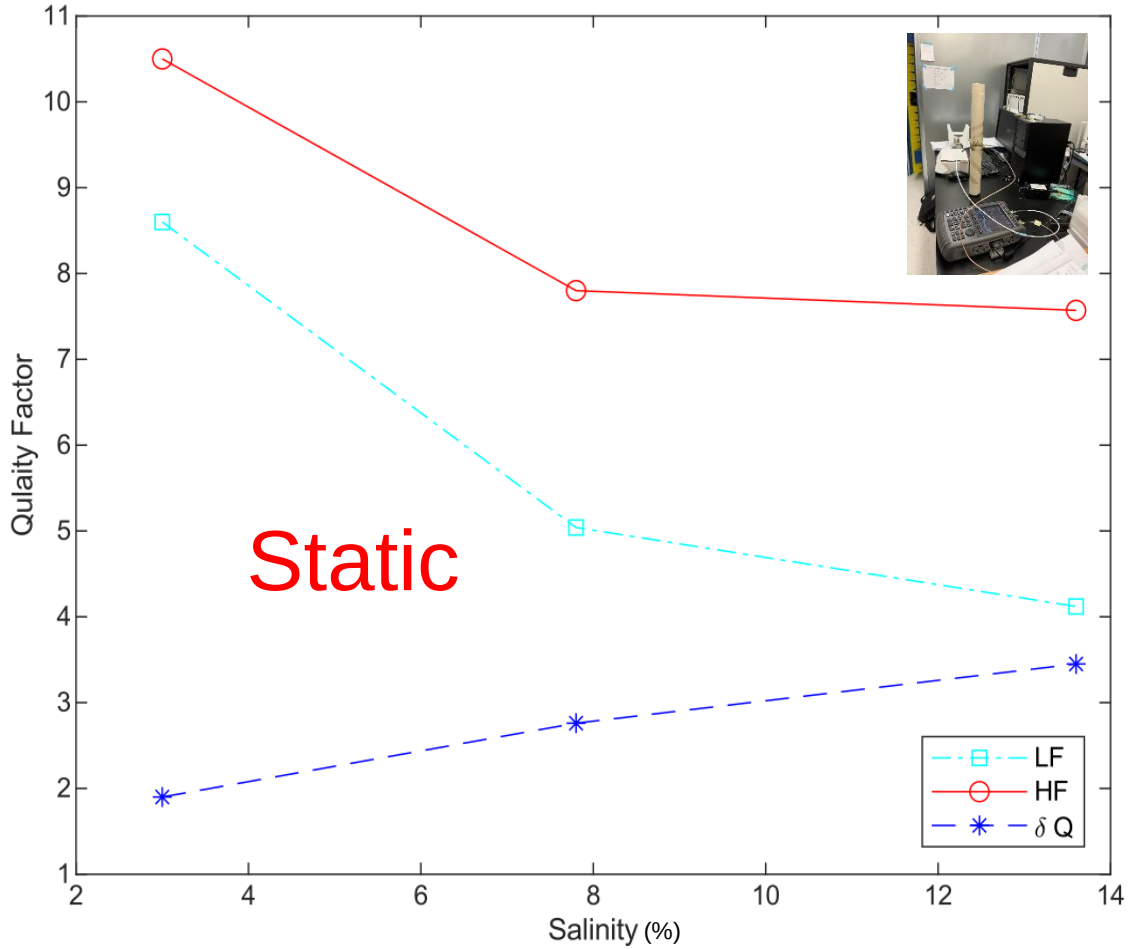


Comparison with SwRI Flow loop









Conclusions

- The slope for quality factors (i.e. Q' and Q'' vs. WC) at the same salinity differed between the resonators, thus confirming that the DFOR sensor captures the dispersion behavior of brine.
- Slope for quality factors also varies with salinity confirming the feasibility of creating inverse look-up tables.
- Interestingly, the difference in the quality factors for the resonators (δQ) is directly correlated with the salinity of the brine for a specific WC and vice versa.

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