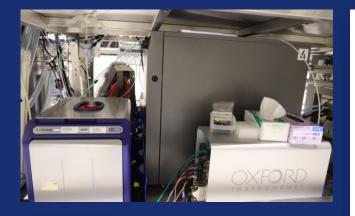
# **X-Pulse NMR Spectrometer**





## Description

- A benchtop NMR device using a permanent magnet operating at 40 °C for the investigation of liquid samples.
- Use cases:
  - Detection of impurities in samples
  - Check of the relative fraction of components in samples if they can be observed in the same measurement
  - Determination of self-diffusion coefficients in liquid electrolyte samples

## Further information

- External D<sub>2</sub>O lock
- Operation in flow-through mode possible
- Operation is possible with regular NMR tubes, but also with a FEP tube fed through the probe hat allows to automatically supply the sample to the device using the ASAB system.

### Highlights

- Magnet weight 159kg
- Operating magnet temperature 40°C
- <sup>■</sup> <sup>1</sup>H resonance frequency 60 MHz
- X-Channel tunable to observe nuclei between <sup>29</sup>Si and <sup>31</sup>P
  - Possible nuclei
    - <sup>■</sup> <sup>1</sup>H
    - <sup>■ 19</sup>F
    - <sup>23</sup>Na
    - <sup>7</sup>Li
    - <sup>31</sup>P
    - <sup>27</sup>Al
- High-Frequency Channel dedicated to <sup>1</sup>H and <sup>19</sup>F observations
- Resolution <0.35 Hz (50%) and <10 Hz (0.55%)</p>

#### Publications

- Szczęsna-Chrzan, A., Vogler, M., Yan, P. *et al.* Ionic conductivity, viscosity, and self-diffusion coefficients of novel imidazole salts for lithium-ion battery electrolytes. *J. Mater. Chem. A* **11**, 13483–13492 (2023).
- [2] Vogler, M., Steensen, S. K. et al. Autonomous Battery Optimization by Deploying Distributed Experiments and Simulations. Adv. Energy Mater. 14, 2403263 (2024).





