

Transportable Hyperpolarization: bridging the gap with PET

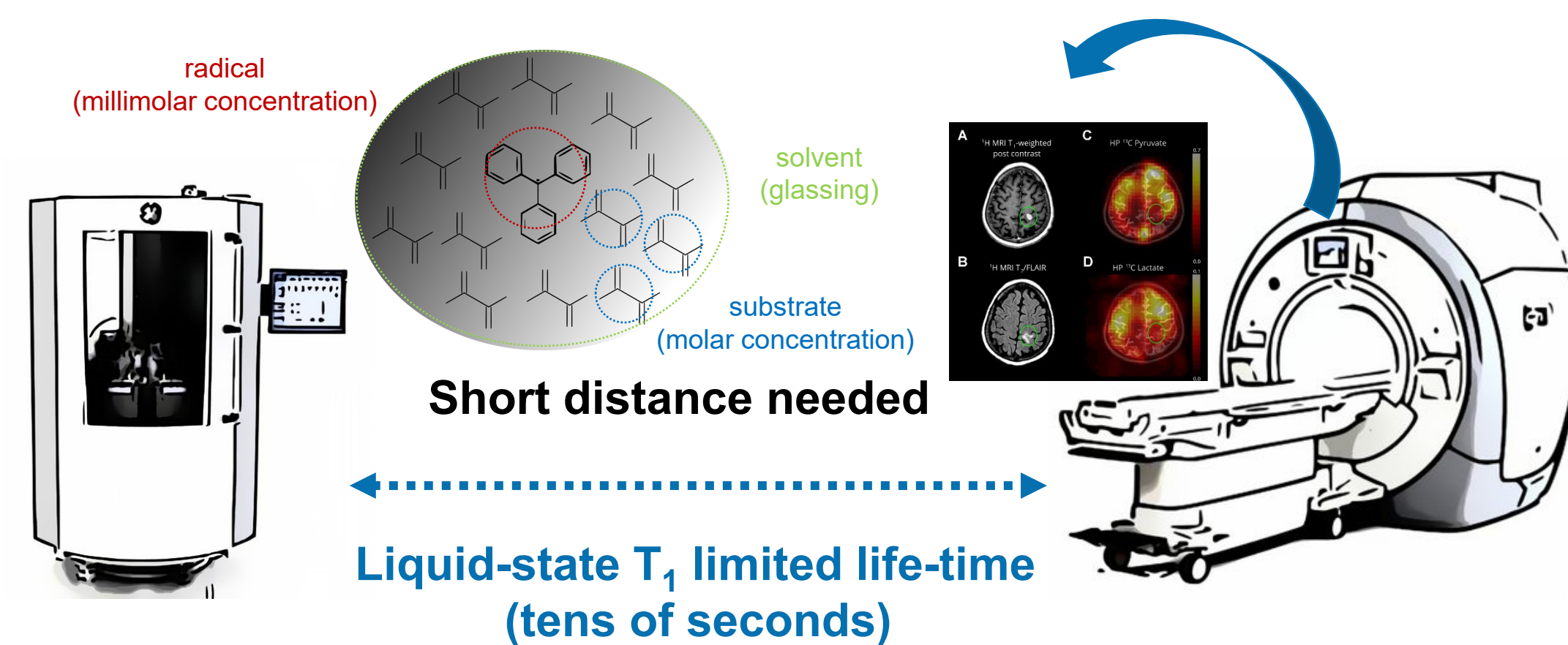
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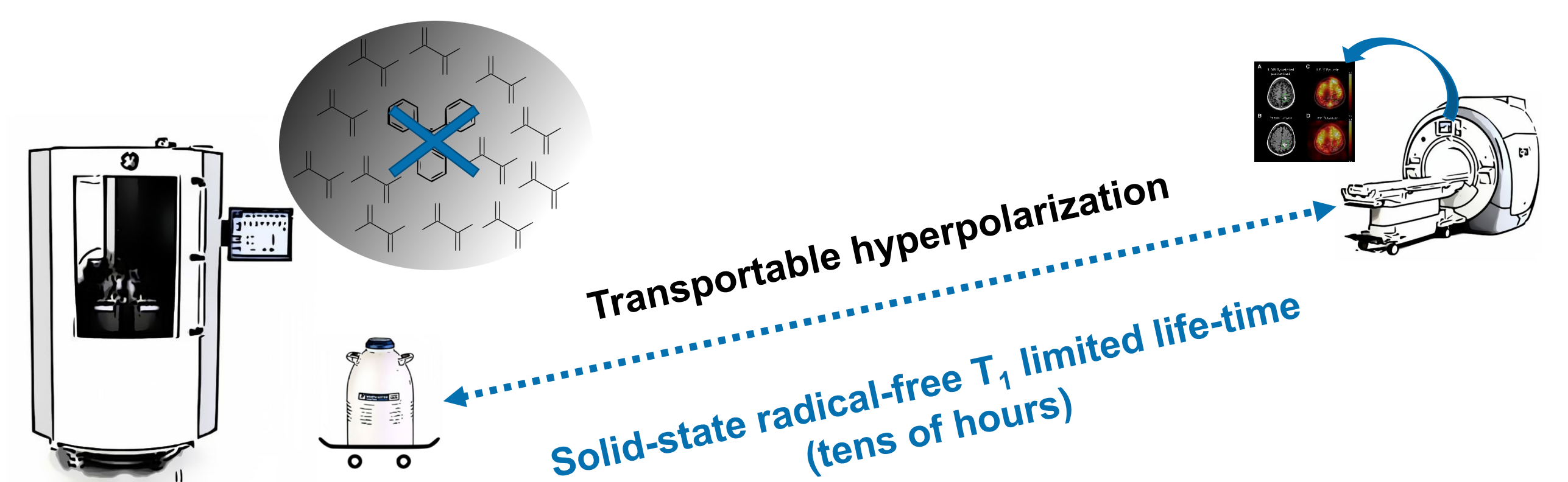
BACKGROUND

Hyperpolarization via Dissolution Dynamic Nuclear Polarization (dDNP) has the potential to revolutionize diagnostic radiology. Nevertheless, the methodology struggles to enter everyday clinical practice. One of the reasons lies in the technical complexity that characterizes dDNP. Differently from PET, hyperpolarized MR contrast agents cannot be transported and have to be prepared on site.

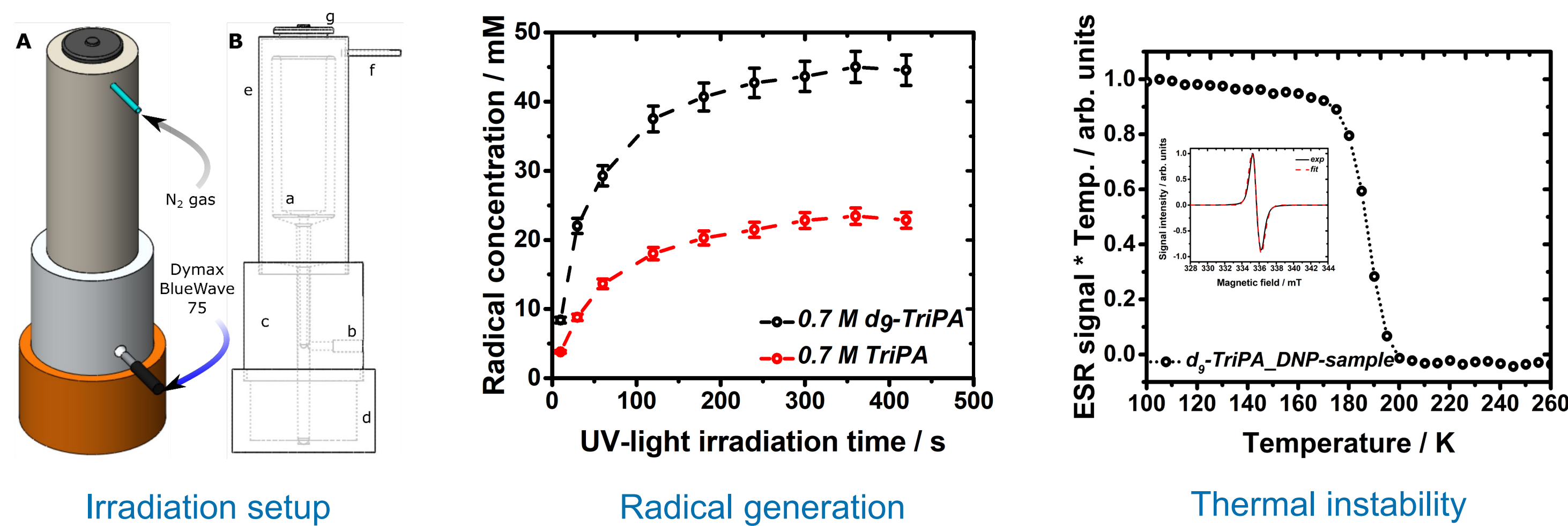


AIMS

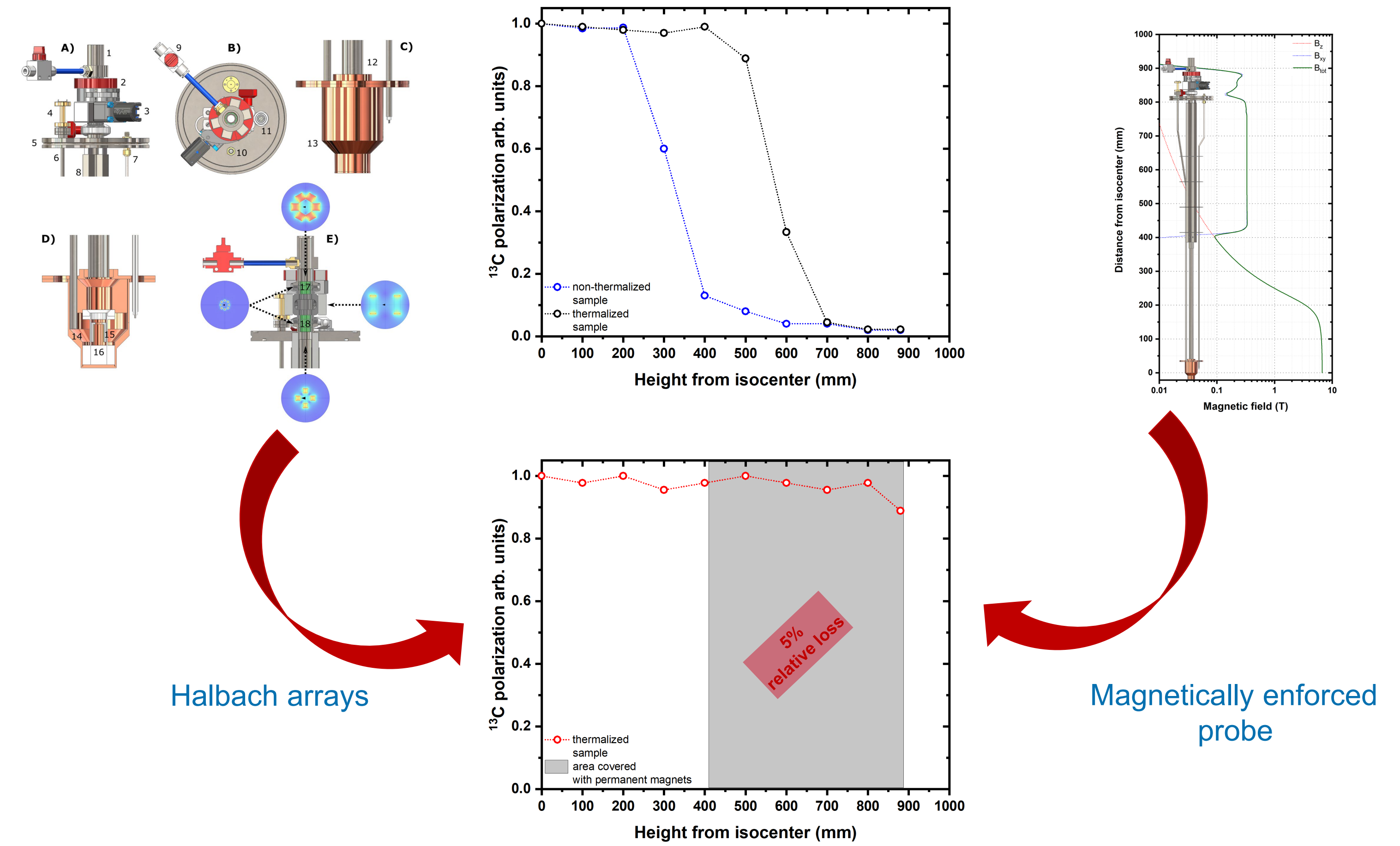
Playing with different electron spin states, cryogenic temperature, and purpose engineered magnetic field pathways, we are developing a robust protocol to change this paradigm. Based on photo-induced



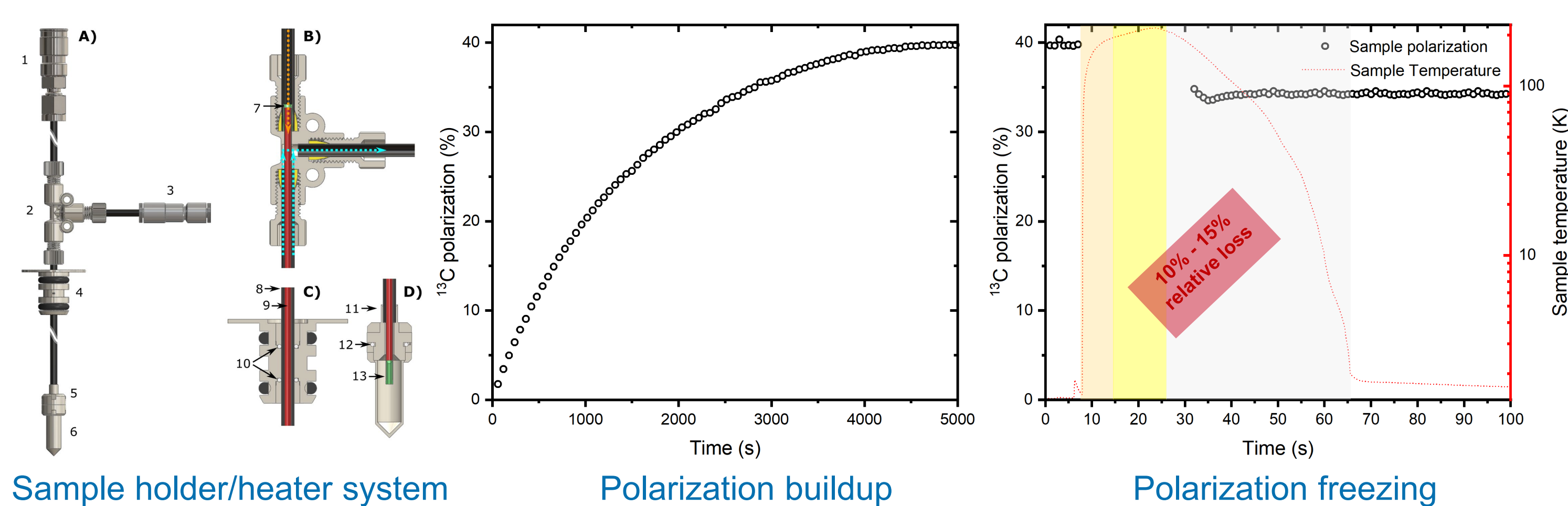
SAMPLE PREPARATION



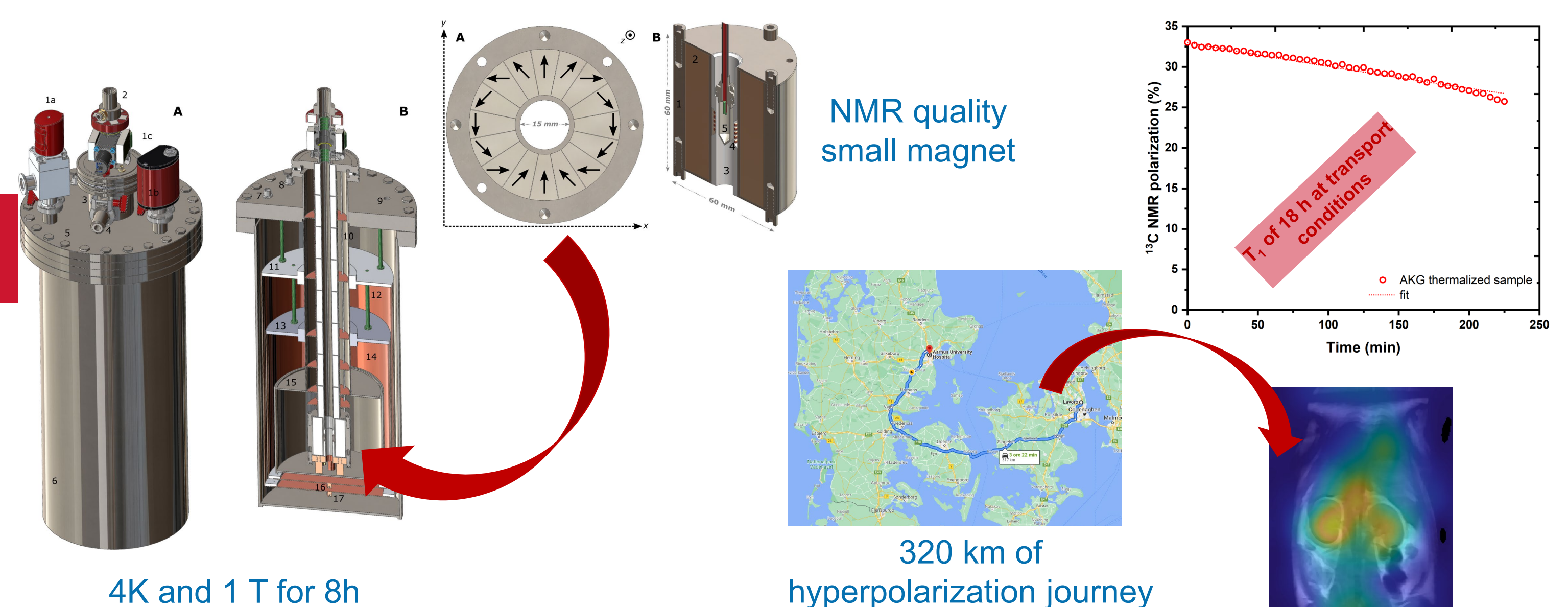
SAMPLE EXTRACTION



DNP AND SPIN-STATE FREEZING

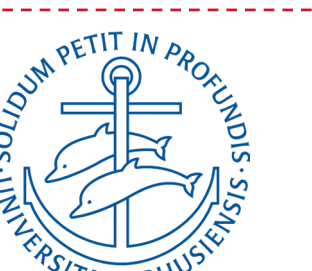


SAMPLE STORAGE AND TRANSPORT



CONCLUSION

- Hyperpolarization is transportable on the scale of hours
- HP MR can be performed without a polarizer on site
- Magnetic field is needed to shelter the polarization
- Cryogenic temperature is needed to guarantee hours long lifetime of the HP state



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