

1	CEIPEX RESEARCH TOPIC LEVEL2: Magneto-optical & THz spectroscopy
2	RESEARCH GROUP: Magneto-optical & THz spectroscopy (Petr Neugebauer)
3	TOPICS/FOCUS: Characterization of electrochemical double layers/electrolyte composition with rapid-scan ESR spectroscopy in the ns-range in redox flow batteries
4	SUMMARY: One of the largest issues nowadays is the efficient storage of electrical power in batteries. This topic is dedicated to extracting electrochemical kinetics in the ns-range using advanced ESR methods at THz frequencies, with the focus on flow cell batteries. The candidate will: - Adapt and develop methodology for ns-time scale reaction monitoring using rapid scan ESR - Implement the ESR rapid scan methodology into in situ characterization of redox flow batteries – vanadium oxidation states - Performing and analyzing high-frequency ESR on relevant materials - Interpretation of the reaction kinetics, - Study of the degradation mechanisms of redox flow batteries during operation - Closely collaborate with CEITEC MUNI and MSCA-DN-SPACER partners - Seek potential applications of the developed methodology and its modification to other areas of chemical research
5	RG WEBPAGE/CONTACT: https://spectroscopy.ceitec.cz/ Assoc. Prof. Dr. Petr Neugebauer