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Probing Perovskite Precursor Inks by Electrical Impedance Spectroscopy

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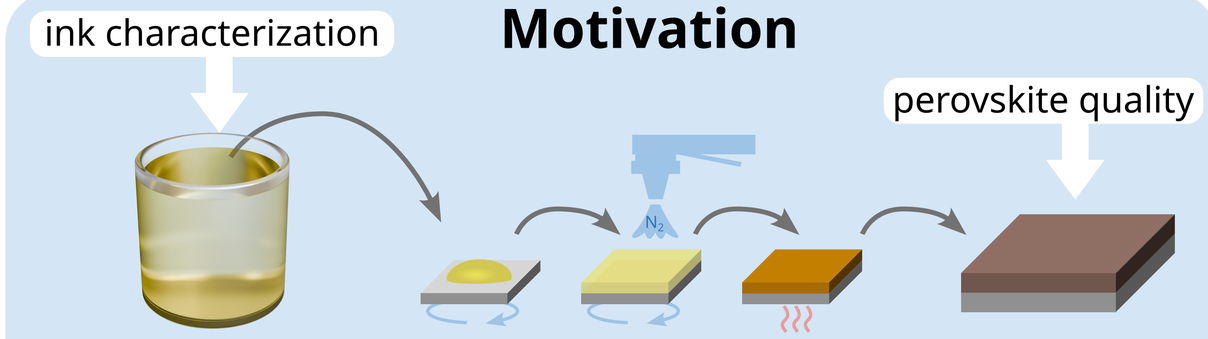
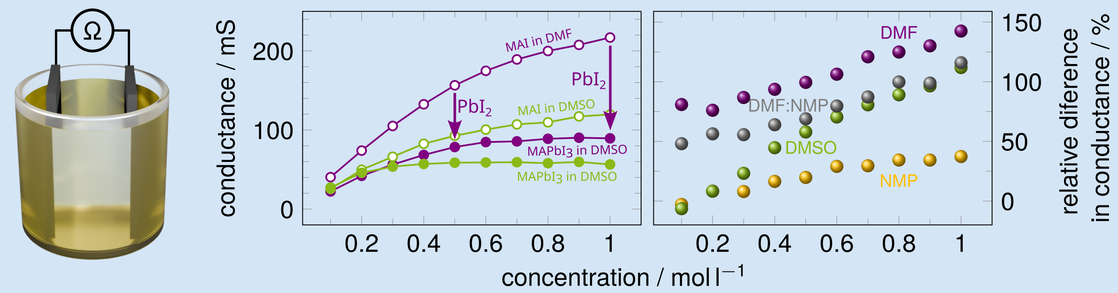
Motivation



→ predict perovskite quality by ink characterization

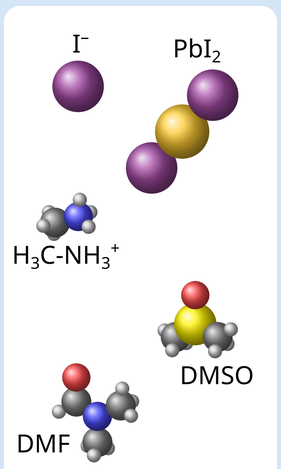
Our Previous Work: Conductance of Ink[1]



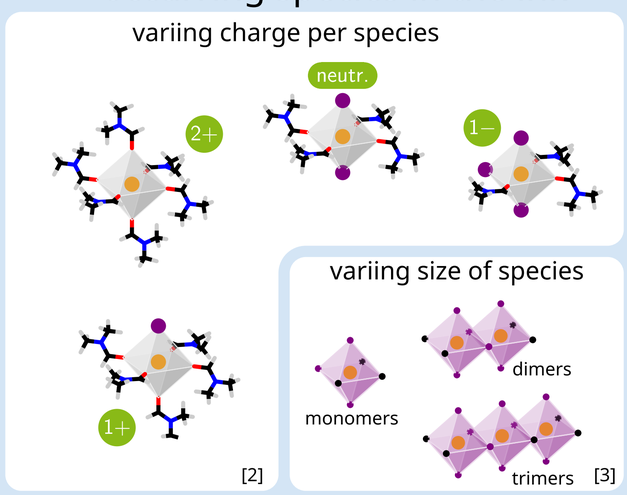
→ reduced charge/volume → reduced conductance

Impedance Spectroscopy on Perovskite Ink

components of the ink



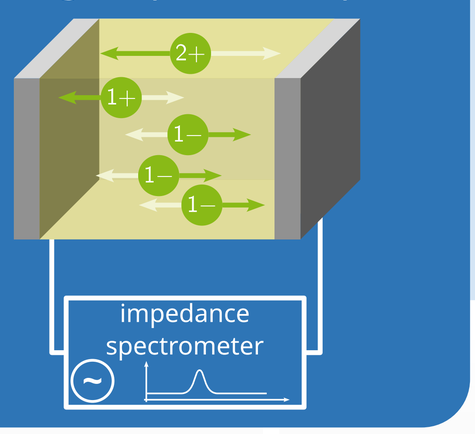
occurring species in the ink

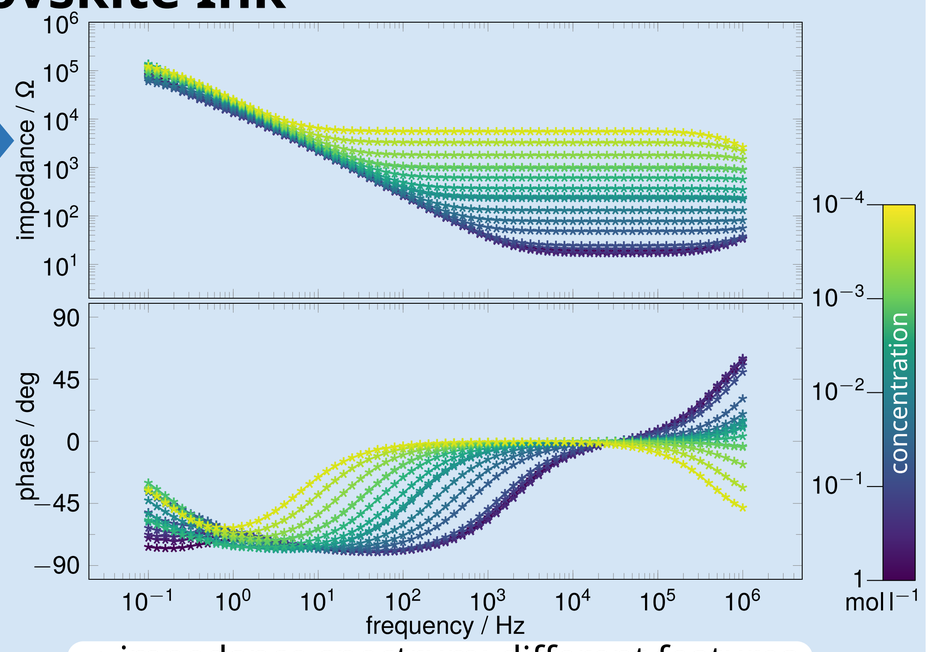


→ model of charged species in perovskite ink

concentration series on $MAPbI_3$ in DMSO

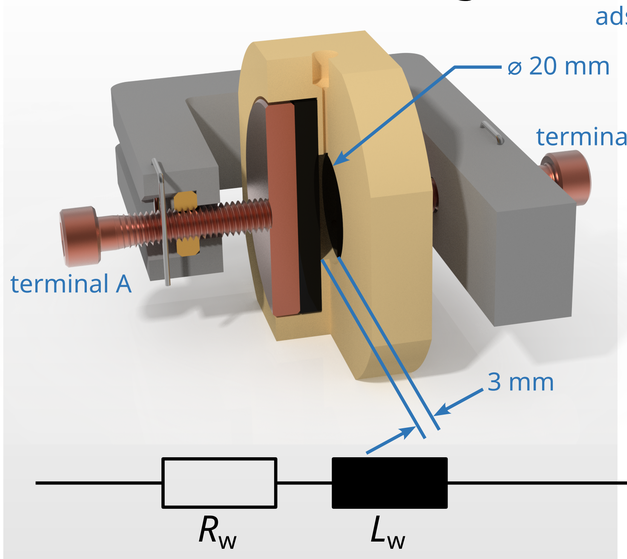
perovskite precursor ink: charged species in liquid



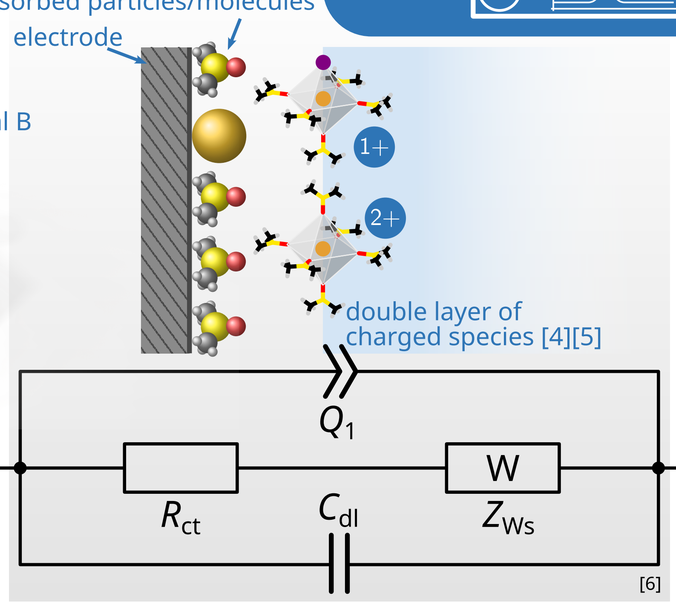


→ impedance spectrum: different features depending on concentration

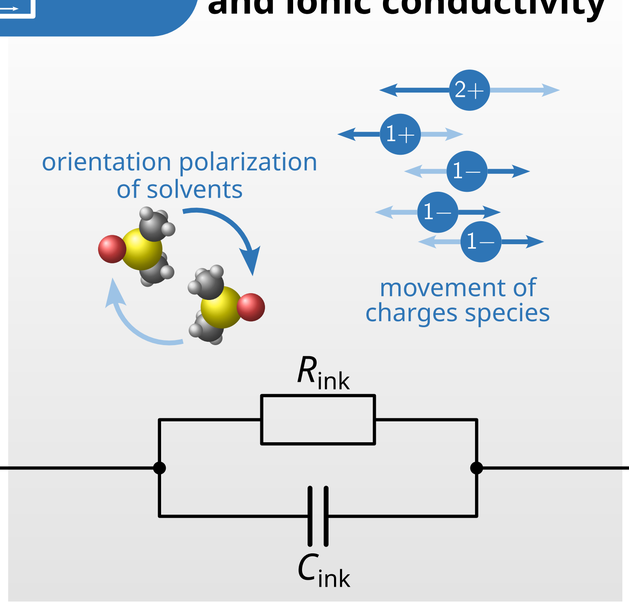
contact and wiring



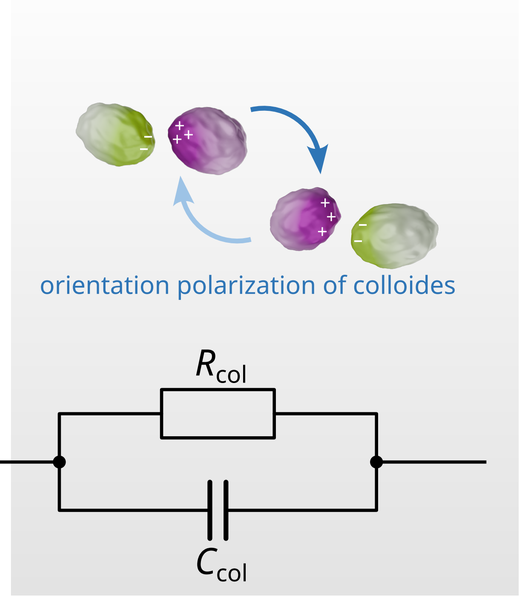
double layer



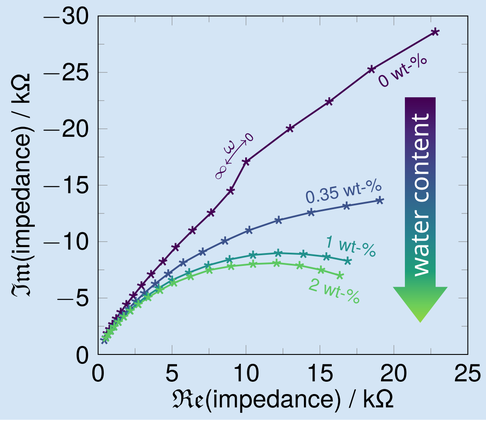
molecule polarization and ionic conductivity



dipolar pair polarization



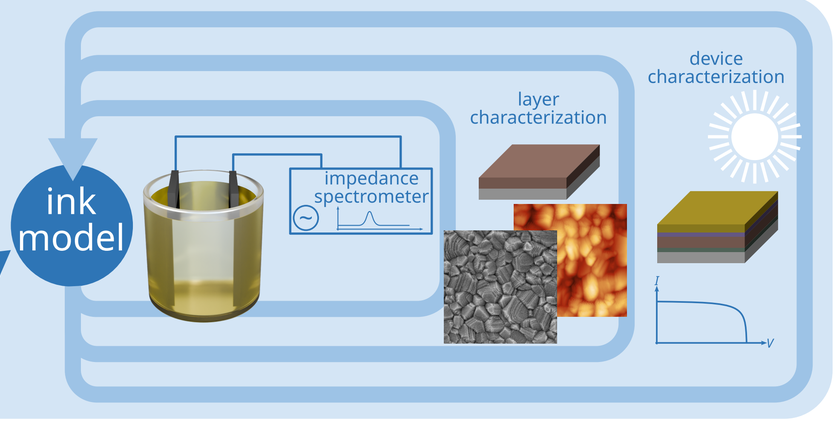
Conclusion and Next Steps



→ detailed electrical model for perovskite inks

→ detection of impurities possible

AI methods:
- different degradation types
- improvement of ink formulas



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Acknoledgements:
DFG Deutsche Forschungsgemeinschaft
Grant numbers: RI 1551/12-2
RI 1551/15-2
FOXES is a project founded by the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 951774