The contribution compares non-stoichiometries in the bulk of mixed conductors with the situation at abrupt junctions.

While great efforts have really been devoted to optimizing ion conductivity in bulk and boundary zones, much less emphasis is laid on the variation of non-stoichiometry, i.e., of component storage.

The general thermodynamic situation including the presence of boundaries is set out by assuming abrupt structural changes at the contacts.

Specific examples highlight the significance for oxygen, hydrogen, lithium and silver storage. They comprise oxygen non-stoichiometry in mesoscopic nanocrystalline SrTiO\textsubscript{3} as a function of oxygen partial pressure, hydrogen storage and lithium storage in “job-sharing” composites as well as ultrafast silver storage in composites of superion-conductors with graphite or metals.