Abstract of the „Habilitationsschrift“

„The preparative application of a copper(I) halide matrix for the synthesis of new materials -
inverstigation of adducts of copperhalides and –chalcogenometallates“

(„Die präparative Anwendung der Kupfer(I)-halogenid-Matrix zur Synthese neuer Materialien-
Untersuchungen an Kupferhalogenid-Addukten und –chalkogenometallaten“)

by Arno Pfitzner

This habilitation thesis deals with systematic investigations of the optimization of new copper ion conductors. The investigations are focused on the preparation and characterization of new adducts of new copper(I) halides with neutral or low charged cage molecules and polymers of elements of group 15 and 16 of the PSE. It is shown that the use of copper(I) halides as a matrix provides an experimental access to new molecules, which could not be obtained before. Examples are the neutral polymer $^{1}_{\infty}[P_{12}]$ and the heteroatomic chains $^{1}_{\infty}[STe]$ and $^{1}_{\infty}[SeTe]$. This thesis also reports on the structural and impedance spectroscopic characterization of copper antimony chalcogenides and mixed halide chalcogenides of copper. This type of compounds can be obtained when complex thioanions, e.g. thioantimonate(III) and –tellurate(IV), are present. These materials with a mixed anion sublattice are of special interest with respect to their ionic conductivity.

KEYWORDS: solid state chemistry, ion conductors, copper(I) compounds