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**VABILO NA PREDAVANJE
V OKVIRU DOKTORSKEGA ŠTUDIJA
KEMIJSKE ZNANOSTI**

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z naslovom:

**Ionic liquids: structure, transport and
properties interplay**

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Vljudno vabljeni!

Abstract:

Keywords: ionic liquids, structure, dynamic, ion-pairing, spectroscopy, molecular dynamic

Ionic liquids are a fascinating class of materials : they are only composed of ions and are still liquid around room-temperature or even below (for the sake of memory, NaCl melting point is 801°C). Such a low melting point arises from a subtle balance between coulombic attractive forces and repulsive entropic factors. Even so, millions of cation/anion combinations may present such property, most generally they arise from large organic flexible cations which are counterbalanced by inorganic or organic anions.

Then these materials present a lot of exceptional properties : low melting point, non volatile, non combustible, low viscosity, chemical and electrochemical stability, ionic conductivity, versatile solubility of molecules and ions This explains the diversity of domains in which they found potential applications (green chemistry, biomass processing, electrolyte for batteries or fuel cells, tribology ...) and then, tuning such matter to specific properties is essential to reach consumer market. Most of these properties are related to the possibility to transport specific quantities : reactant molecules, specific ions, heat, matter ...

In this lecture, I will show that these properties are strongly related to the specific structure of these 'block materials' in which ionic cores and aliphatic moieties are mixed at the most intimate level through chemical links ; blending antipodal components also leads to a complex dynamic behavior inside these liquids. Then, deciphering the physico-chemistry of such complex fluids necessitates to investigate structural and dynamical aspects with a multiscale approach based on many advanced techniques, spectroscopies and also with the help of molecular dynamics. Some applications of these liquids will be also presented.

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