

**Subarea POB3:**

**Title of the presentation: Bio-derived Ionic liquids for applications in energy conversion and storage**

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**Abstract:**

Ionic liquids, compounds composed exclusively of ions have been intensively investigated as electrolytes for electrochemical applications. However, due to their intrinsic properties like negligible vapor pressure, high thermal stability, non-flammability, high heat capacity and heat of fusion they can be used for novel applications covering energy conversion and storage i.e. as precursors for N-doped carbon materials or phase change materials. Development of clean and sustainable energy and chemical processes remain one the most important current demands. N-doped carbon materials which can be fabricated with the use of ionic liquids have been recently studied as metal-free electrode materials for fuel cells, Li-ion batteries or supercapacitors, as an alternative to commonly used noble metals. Also phase change materials that can be successfully realized with ionic liquids, are an important group of materials which substantially contribute to solutions devoted to energy savings by sustainable use of waste heat and solar energy.

During presentation the design, synthesis and characterization of various ionic liquids, including ones based on precursors derived from natural sources like carbohydrates and amino acids will be presented with a special focus on their potential applications in N-doped carbon materials and phase change materials. The structures and properties of the ionic liquids-derived materials can be controlled at the molecular level through rational design of the ionic precursors, by virtue of their structural diversity.