

WEBINAR SERIES ON

## NMR RELAXOMETRY THEORY AND APPLICATIONS

WEDNESDAY  
**21ST**  
**APRIL**  
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16.00-17.00 CET



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**Water dynamics  
in polysaccharide based  
hydrogel microparticles**

### Title

Water dynamics in polysaccharide based hydrogel microparticles

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### Abstract

Polysaccharides are sugar derivative biopolymers found in natural sources like microorganisms, seaweeds, plants and animals. Mesoporous hydrogels prepared by the cross-linking of polysaccharides both utilize from biocompatibility and hydrophilicity of polysaccharides, at the same time show mechanical stiffness and can absorb water much larger than their dry mass. These unique features, when combined with their size advantageous and enhanced surface-to-volume ratio make polysaccharide based hydrogel microparticulate systems very promising materials for sustained drug delivery, tissue engineering and food applications. Field Cycling NMR relaxometry, being a technique sensitive to confinement effects can be used to investigate the dynamics of water confined on the surface and inside the pores of such hydrogel microparticles. In this presentation, on the basis of FFC NMR relaxometry results complemented with NMR diffusometry measurements the topic will be discussed for several examples of polysaccharide based microgels.

### Author Biography

Evrin Umut has graduated from Hacettepe University Physics Engineering Department (Ankara / Turkey), where he also received his Ms.Sc and Ph.D degree in Physics and worked as research assistant for eight years. During his Ph.D study he worked one year as visiting scientist in NMR-NQR group at Pavia University 'A. Volta' Physics Department (Pavia / Italy). After his Ph.D he worked as post doctoral fellow in University of Warmia and Mazury, Faculty of Mathematics and Computer Science, Department of Relativistic Physics (Olsztyn / Poland) between 2015-2018. He is currently working as Lecturer in Dokuz Eylul University, School of Healthcare, Department of Medical Imaging Techniques (Izmir/Turkey). His scientific interests are NMR relaxometry, dielectric spectroscopy and biomedical applications of magnetic materials like MRI contrast agents, hyperthermia and targeted drug delivery.