THE INTERNATIONAL HYDROCOLLOIDS CONFERENCE

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4th Call for Abstracts for the 16th International Hydrocolloids Conference
October 23-26, 2022, Guelph, Canada

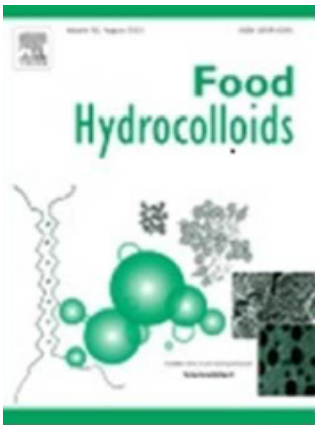
Dear Colleagues:
You are invited to submit an abstract or abstracts to the 16th International Hydrocolloids Conference (16th IHC), which will be held at the University of Guelph, Ontario, Canada, on October 23-26th, 2022.
A site meeting will be held at Nanchang University.
The abstracts could be submitted through the conference website: (www.international-hydrocolloids-conference.com). **The deadline for submission of abstracts is extended to August 15, 2022.**

Registration for the conference is open at:
https://confreg.uoguelph.ca/registration/Register/default.aspx?code=C000183

We will offer limited spots for remote presenters. Please contact the conference organizers for consideration of remote presentations. Preference will be given to in person presentations.

The Topics of the 16th IHC include:
1. Novel hydrocolloids: new sources and processes, characterizations, functional properties and applications
2. Modification of natural hydrocolloids: methodologies, improved functionalities, and novel applications
3. Plant Proteins: characterizations, functionalities and applications
4. Hydrocolloids in nano- emulsions and microencapsulation
5. Hydrocolloids in cosmetics and 3D Printing
6. Synergisms of polysaccharides, proteins and phenolics
7. Polysaccharides and dietary fibres: prebiotics and gut health
8. Polysaccharides and immune responses

All presenters, including plenary, invited, oral and poster presentations, are invited to submit your manuscripts for consideration to be published in special issues on ***Food Hydrocolloids***, and ***Bioactive Carbohydrates and Dietary Fibre***.
Both journals are now open to accept manuscripts.



16th IHC Organizing Committee Chairs

Professor Steve W. Cui, Ph.D. (Chair)
Guelph Research and Development Center,
Agriculture and Agri-Food Canada, ON Canada
Professor Mingyong Xie, Ph.D. (Co-Chair)
Academician, Chinese Academy of engineering, Nanchang University, Jiangxi, Nanchang
Professor H. Douglas Goff, Ph.D. (Co-Chair)
Department of Food Science, University of Guelph, ON Canada

Tuesday 25 October 2022		
	PCH-North	**PCH-South**
	Session Chair: Douglas Goff	
8:30-9:10	P3 Prof. Dr. .Mike Gidley, Australia, factors affecting in vitro gut fermentation outcomes from hydrocolloids and their assemblies	
9;10-9:45	K3 Prof. Dr. Vassilis Kontogiorgos, Australia, Adsorption kinetics and dilatational rheology of plant proteins at the air- and oil-water interfaces	
9:45-10:20	K4 Prof. Dr. Youling Xiong, USA, Nonthermal bond disruption to unlock the functionality of structurally complex proteins.	
10:20-10:50	**Break**	
	Session Chair: Katsuyoshi Nishinari	**Session Chair: Yong-Cheng Shi**
10:50-11:10	C25 - Synergistic gelation between yellow mustard gum and κ-carrageenan Go to abstract	C28 - Stabilization of air-water interfaces with oat prolamin nanoparticles Go to abstract
11:10-11:30	C26 - Textural and rheological properties of glucono-delta-lactone induced set plant-based youghurts Go to abstract	C29 - Modulation of the viscosity of guar-based fracking fluids using salts Go to abstract
11:30-11:50	C27 - Assessing protein solubility of commercial pea protein for application in food systems Go to abstract	C30 - Physical properties of mixed gels of fish and mammalian gelatins. Go to abstract
11:50-12:30	**Lunch / Poster**	
	Session Chair: Steve Cui	
12:30-1:30	Industrial Applications - Industrial hydrocolloids challenges: from raw material to market Plus Round-Table Discussion	
1:30-2:10	P4 Prof. Dr Aiqian Ye, New Zealand, Gastric colloidal behaviour of milk protein as a tool for manipulating nutrient digestion	
2:10-2:45	K5 Prof. Dr. Qi Wang, Canada, Application of Food Hydrocolloids in Microencapsulation of Antibiotic Alternatives in Food and Agriculture Production	
2:45-3:10	**Break**	
	Session Chair: Youling Xiong	**Session Chair: Qi Wang**
3:10-3:30	C31 - Molecular interactions and in-depth dynamic simulations on ß-casein and phenolic acid complexes under ultra-high temperature conditions Go to abstract	C38 - Nanoencapsulation and Bioavailability Enhancement Study of Microalga Phaeodactylum tricornutum Extract Containing Fucoxanthin Go to abstract
3:30-3:50	C32 - Revealing the characteristics of Enzymatic Cross-linked Micellar Casein powders by Asymmetrical Flow Field-Flow Fractionation Go to abstract	C39 - Effect of the mechanical and calorimetric glass transition temperatures in regulating the molecular transport of bioactive compounds in high-solid hydrocolloid systems Go to abstract
3:50-4:10	C33 – Microstructural evolution during acid induced gelation of cow, goat, and sheep milk probed by time-resolved (ultra)-small angle neutron scattering Go to abstract	C40 - Visualizing the microscopic structures of non-destructive starch hydrogels using synchrotron-based X-ray computed tomography Go to abstract
4:10-4:30	C34 - The interaction of milk proteins and digestive enzyme (pepsin) Go to abstract	C41 - Starch structure and exchangeable protons contribute to reduced aging of high-amylose wheat bread Go to abstract
4:30-4:50	C35 - Identification and control of malodourous compounds in UHT beverages incorporating fava bean protein and soy protein Go to abstract	C42 - Influence of nanocellulose with different particle size on pasting and rheological properties of wheat starch Go to abstract
4:50-5:10	C36(r) – Characterization of the mixed gel from whey protein isolate and sodium caseinate in the presence of gluconic delta lactone with or without heat-treatment Go to abstract	C43 - Gelation of cereal ß-glucan after solubilization at the physiological temperature: effect of molecular structure Go to abstract
5:10-5:30	C37(r) - Supramolecular self-assembly of sodium caseinate with calix[4]resorcinol Go to abstract	C44(r) - Molecular characterization of interactions between Lectin - a protein from the common edible mushroom (Agaricus bisporus) - with dietary carbohydrates Go to abstract
6:00	Conference Banquet	

C39-Effect of the mechanical and calorimetric glass transition temperatures in regulating the molecular transport of bioactive compounds in high-solid hydrocolloid systems

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The glass transition temperature (T_g) indicates a reversible transformation from the rubbery plateau to a glassy consistency in materials science. In high-solid food systems, the concept of glass transition temperature is considered as an index of convenience in controlling the rate of physicochemical, enzymatic and biological processes.[1,2] At temperatures below T_g (i.e. in the glassy state), dense packing and reduction in segmental mobility of polymer chains diminishes the hole-free volume in the matrix.[3,4] Whether the mechanical or calorimetric T_g is the most relevant index to follow the diffusion of bioactive compounds in high-solid amorphous foods is an interesting question that merits examination.

In doing so, the three-dimensional structure of distinct molecular weights of gelatine/glucose syrup systems and κ-carrageenan/polydextrose systems with increased potassium ions were formulated to entrap bioactive compounds. The physiochemical characteristics of the systems were determined using differential scanning calorimetry (DSC), small deformation dynamic oscillation, Fourier-transform infrared spectroscopy (FTIR), wide-angle X-ray diffraction (WAXD) and scanning electron microscopy (SEM). The molecular theory of diffusion, combined with the concept of free volume, was utilised to model the release mechanism of various bioactive compounds as affected by changes in the structural relaxation of the polymer/co-solute systems.

The investigation of the molecular transport of nicotinic acid from bovine and fish gelatin networks demonstrated the importance of mechanical glass transition temperature in controlling the diffusion of this bioactive. The molecular weight of polymers affects the ability to form a network, and the diffusion of nicotinic acid is governed by the polymeric network's structural relaxation (α-transition). In accordance with this study, work on the release mechanism of caffeine in κ-carrageenan matrices showed that potassium counterion stabilisation of the polysaccharide helices increases the decoupling between polymeric matrix and bioactive compound diffusion. In conclusion, results demonstrated the prominent effect of the mechanical over the calorimetric glass transition temperature on the release kinetics of bioactive compounds and bode well for designing delivery vehicles with added bio-functionality.

References

1. Roudaut, G., Simatos, D., Champion, D., Contreras-Lopez, E., & Le Meste, M. (2004). Molecular mobility around the glass transition temperature: A mini review. *Innovative Food Science & Emerging Technologies, 5*(2), 127–134.
2. Gray, D. A., Bowen, S. E., Farhat, I., & Hill, S. E. (2008). Lipid oxidation in glassy and rubbery-state starch extrudates. *Food Chemistry, 106*, 227–234
3. Hoare, T. R., & Kohane, D. S. (2008). Hydrogels in drug delivery: Progress and challenges. *Polymer, 49*(8), 1993–2007.
4. Panyonyai, N., Bannikova, A., Small, D. M., & Kasapis, S. (2015). Controlled release of thiamine in a glassy κ-carrageenan/glucose syrup matrix. *Carbohydrate Polymers, 115*, 723-731.