



28th - 31st July 2026

Borneo Convention Centre Kuching,
Sarawak, Malaysia

S03 NEW PRECISION POLYMERIZATION, WELL-CONTROLLED MACROMOLECULES, AND ADVANCED SUSTAINABLE POLYMER DESIGN

Advanced Synthesis:

Using living and controlled polymerization to build specific molecular architectures.

Renewable Materials:

Creating polymers from bio-based feedstocks rather than fossil fuels.

Circular Design: Developing materials that feature

1. **Dynamic Cross-linking:** Networks that can be reshaped or repaired.
2. **Recyclability:** Closed-loop systems where materials can be broken down and rebuilt.
3. **Programmed Degradation:** Backbones designed to disappear chemically or biologically after use.

Symposium Chair
Prof Dr Kotaro Satoh, Japan



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macro2026.org/symposium



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ABOUT SYMPOSIUM

New precision polymerization strategies have enabled unprecedented control over molecular weight, architecture, sequence, and functionality, providing a powerful foundation for the design of well-controlled macromolecules with tailored properties. These advances are increasingly critical for the development of bio-based and sustainable polymer systems, as growing environmental concerns demand materials that combine high performance with reduced environmental impact.



ABOUT SYMPOSIUM

This symposium focuses on recent progress in new precision polymerization, well-controlled macromolecules, and advanced sustainable polymer design, with particular emphasis on polymers derived from renewable and bio-based feedstocks. Topics will include controlled and living polymerization techniques, sequence-regulated polymers, and advanced macromolecular architectures incorporating dynamic cross-linking, reprocessible and recyclable polymer networks, and chemically or biologically degradable backbones. Strategies enabling reversible covalent bonding, closed-loop recycling, and programmed degradation based on bio-based building blocks will be highlighted.



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The objective of this session is to showcase molecular-level design concepts that integrate precise synthetic control with circular material design, spanning bio-based polymer synthesis, dynamic networks, and life-cycle-aware macromolecular architectures. By bringing together researchers across synthesis, characterization, and theory, this symposium aims to foster interdisciplinary discussion and inspire next-generation sustainable macromolecular materials.