

## ACS-GHS June 2024 Seminar Dr. Ravindra Aglave



**Wednesday, June 26, 2024**

6:30 - 7:30 pm  
via Zoom

Register to receive the meeting link at <https://acsghs.wildapricot.org/event-5673579>

### **Towards Digital Materials Engineering for Development of Advanced Materials**

Large technological advancements are almost always dependent on the creation (or discovery) of novel materials. Revolutionary developments in material science enable the next generation of technological advancement. The full exploitation of those technologies (by engineers) will often require further investment into the evolutionary development of those materials. Advanced materials with novel properties hold the key to innovation for organizations across industries. As the transition to clean energy gathers pace, there's increased pressure on design engineers and researchers to develop innovative materials for sustainable energy solutions. However, the path from initial discovery of new materials to production can be costly and fraught with many challenges. This paper examines how simulation can be an effective way for organizations to discover and develop new materials faster to solve their complex engineering challenges. In this talk we will speak about the entire value chain of materials: from discovery to performance assessment to production processes as well as post-production processing. We will also identify the current gaps in this workflow as well as our activities to close those gaps. The Siemens solution consists of an end-to-end workflow based on the digital twin concept with four main steps: materials discovery, materials performance analysis, process design and engineering, and materials processing. The talk will include examples of these phases to weave a digital thread through the solution as well as the tools that are involved both for simulation as well as the backbone (material lifecycle management) platform for digital engineering.

**Biography:** As the Director of Simcenter Portfolio for Process Industries at Siemens Digital Industries Software, Ravindra leads the development and delivery of innovative simulation solutions that solve problems from the molecular scale to plant scale for various sectors, such as food and beverage, consumer products, and pharmaceuticals. He has over 20 years of research and engineering experience in academia and industry and a Ph.D. in Natural Sciences from Heidelberg University. His core competencies include simulation using computational fluid dynamics (CFD), flow sheet simulation, mixing, and reaction engineering, combustion and reaction kinetics, digital twins, and materials modeling. He works closely with research organizations and universities to advance the state-of-the-art in these fields and to create value for our customers and partners. His mission is to enable the digital transformation of process industries and to enhance their efficiency, sustainability, and competitiveness.