

Symposium H: Advanced materials for separation technologies

Scope of the symposium

The scope of this symposium is to identify opportunities for new and advanced materials in separation technologies that will lead to large reductions in energy use and harmful emissions.

The major industrial separation technologies are: distillation, evaporation, drying, extraction, absorption, adsorption, membrane, crystallization, and physical property-based operations (such as filtration and screening).

The largest opportunities for energy reduction are offered by replacing high-energy with low-energy separation systems such as membranes and filters. The possibility of such replacements depends on developing materials which must overcome limiting barriers comparing to currently available materials:

Materials broadly play two roles in separations technologies:

Structural: related to mechanical properties. Developing new materials for structural parts with greater erosion and wear resistance will provide operational energy savings in terms of longer equipment lifetimes, fewer shutdowns, and novel equipment designs that conserve energy.

Functional: related to the separation processes themselves. Separation agents perform on the micro or molecular level interacting chemically and physically with the components requiring separation. They might be ion exchange resins, molecular sieves, membranes and filters. Development of new and advanced materials separating agents can potentially lead to economically viable low-energy replacements for high-energy separation technologies, a path that offers substantial reduction in energy usage.

Abstracts will be solicited in (but not limited to) the following topics:

- Filtering media: fibers, cellular, porous and dense materials
- Filters for water and wastewater treatment
- Gas separation membranes
- Nanoparticles separation
- Ultrafiltration membranes
- Electrostatic separation
- Solid-liquid separation
- Solid-gas separation
- Membrane fouling
- Fundamentals
- Testing
- Simulation
- Applications

Symposium Organizers

Dachamir Hotza (Department of Chemical Engineering, UFSC, Brazil)

Joe Da Costa (Department of Chemical Engineering, University of Queensland, Australia)

Murilo Innocentini (Department of Chemical Engineering, UNAERP, R. Preto/SP, Brazil)

Jairo A. Escobar (Department of Mechanical Engineering, UNIANDES, Bogota, Colombia)

Invited speakers (tentative list)

Wilhelm Albert Meulenberg (IEK/Germany)

Tor Grande (NTNU/Norway)

Jose Coury (UFSCar/Brazil)

Joe Da Costa (UQ/Australia)

Murilo Innocentini (UNAERP/Brazil)

Jairo A. Escobar (UNIANDES/Colombia)

Scientific committee members (tentative list)

Joe Da Costa (UQ/Australia)

Antonio P. Novaes Oliveira (UFSC/Brazil)

Carlos R. Rambo (UFSC/Brazil)

Carlos P. Bergmann (UFRGS/Brazil)

Gustavo Moure (Petrobras/Brazil)

José C. C. Petrus (UFSC/Brazil)

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