



# SPCC 2016 Panel discussion

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# Where are the greatest challenges facing formulated cleans?

## Purity

- Raw material control is critical → Deep technical understanding of supply chain
- Vertical integration or custom purification. Consistency of “new” components.
- Extensive filtration required for yield.
- Robust inline SPC; paradigm shift in chemical industry

## Cost

- Volume growth drives major price pressure
- Formulation “boundary condition” / Prefer highly aqueous cleans

## Selectivity

- Increasing list of process materials → Complex Requirements
- Atomic Layer Control; Surface-termination; Grain structure; Patterned wfr sensitivity

# What's the best approach to creating a novel formulated clean?

## Novel Solution to Existing Problem?

- Changes are disruptive & resource-intensive
- “Crowded” market
- Motivation must be large
- Major breakthrough in cost, efficiency or performance

## Anticipate New Problems – Proactive Solutions

- Track industry trends & research
- Build a chemistry “Library”
- “Shotgun” R&D approach
- Early characterization is critical to HVM success