Ajinomoto Bio-Pharma Services

- SMALL MOLECULE MANUFACTURING
- LARGE MOLECULE MANUFACTURING
- HIGH POTENCY & ADC SERVICES
- DRUG PRODUCT FILL FINISH
- OLIGO & PEPTIDE SYNTHESIS
- DEVELOPMENT & SCALE UP SERVICES
- PRODUCT QUALITY & ANALYTICAL SERVICES
Chemistry Expertise

- Hydride Reductions
- Enzyme Technology
- Organometallic Chemistry
- Catalytic Hydrogenation
- Cryogenic Chemistry
- Oxidation Chemistries
- Controlled Substances
- Toxic & Potent Chemistries
- Energetic Reactions
- Complex Chemistries
Difficulties in sourcing sensors

- Current used for quality, safety, process control, continued process verification:
  - Spectroscopy: Raman, NIR, MIR, UV
    - Nothing with same level of information as GC of LC
  - FBRM (Focused Beam Reflectance Measurement), PVI (Particle video imaging)
  - Pressure
  - Mass flow controller
  - Temperature
  - Level sensors in barrels and confined spaces (picture: 3L vessel)

- Multipurpose installations
  - Batch 10L-10000L
  - Compact continuous flow (4mm-9mm ID tubular reactors) installations
  - Large variety of organic solvents, acids, bases, oxidants, reductans and mixtures thereof
  - ATEX (T4-T6) and cGMP (FDA, food contact)
Difficulties in sourcing sensors

- Conditions:
  - -100°C – 350°C
  - 0-120 barg
  - Corrosion/attack
  - Flammable, toxic, carcinogenic
  - Pressure swings

- & cGMP & ATEX & compact

- Compact systems – continuous flow reactors design challenge
  - ATEX (Ex d) protection is larger than the sensor
  - Ex d connections are preferred for mobile modular equipment

- Materials
  - wetted parts that cope with most products: PFA/FEP (gas tight polyfluor polymers), Hastelloy, (Al₂O₃)
  - Or no wetted parts: non-contact/non-invasive PAT
Thank you for your attention