

# Sustainable cleaning chemistry for semiconductor production

## GreenClean - Intelligent Fluid - IFTiN

### 1 Project information

#### Conventional chemicals

**Pyrazol/NMP based**

- Petroleum-based & solvent
- Reprotoxicity or strong skin penetration
- High application temperatures & energy requirements
- Aggressive towards equipment & material
- Very high disposal costs

**DMSO/TMAH based**

VS.

#### INTELLIGENT FLUID

- Water-based
- Protects material & equipment
- Low application temperature & energy saving
- Patented microemulsion-based phase fluid technology

### 2 Technology & fields of application

#### Mode of action

Comparison of phase diagrams of a microemulsion system and phasefluids

Classification of intelligent fluids technology.

Lift-off process tests on coupons have already shown high effectiveness

- Cleaning is one of the most important and essential steps in microelectronics in back-end-of-line wiring production or the structuring of other metallizations.
- It has to be repeated many times.
- With up to 13 copper levels on top of each other, it is one of the most important cleaning steps in semiconductor devices.

### 3 Project description

Possible industrial example application

Cleanroom, 300mm cleaning tool

### 4 Project goal

Replacement of critical cleaning chemicals in a representative industrial use case, benchmarking and life cycle assessment using a reference process.