

## Type 1: ZnO:Al characterization

CZ *c*-Si(*p*), 500  $\mu\text{m}$ , 3  $\Omega\text{cm}$

*with or w/o*  
**ALD  $\text{Al}_2\text{O}_3$**

**ALD ZnO**

*with or w/o Al-doping*

**450 nm**

**thermal  $\text{Si}_2\text{O}$**

## Type 2: Contact resistivity studies

CZ *c*-Si(*n*), 185  $\mu\text{m}$ , 3  $\Omega\text{cm}$

**PVD Ag**

***Sacrificial  $\text{Al}_2\text{O}_3$***   
*etched after anneal*

**ALD ZnO**

*with or w/o Al-doping*

**UV/ $\text{O}_3$   $\text{Si}_2\text{O}$**

**$\text{n}^+$  diffusion**