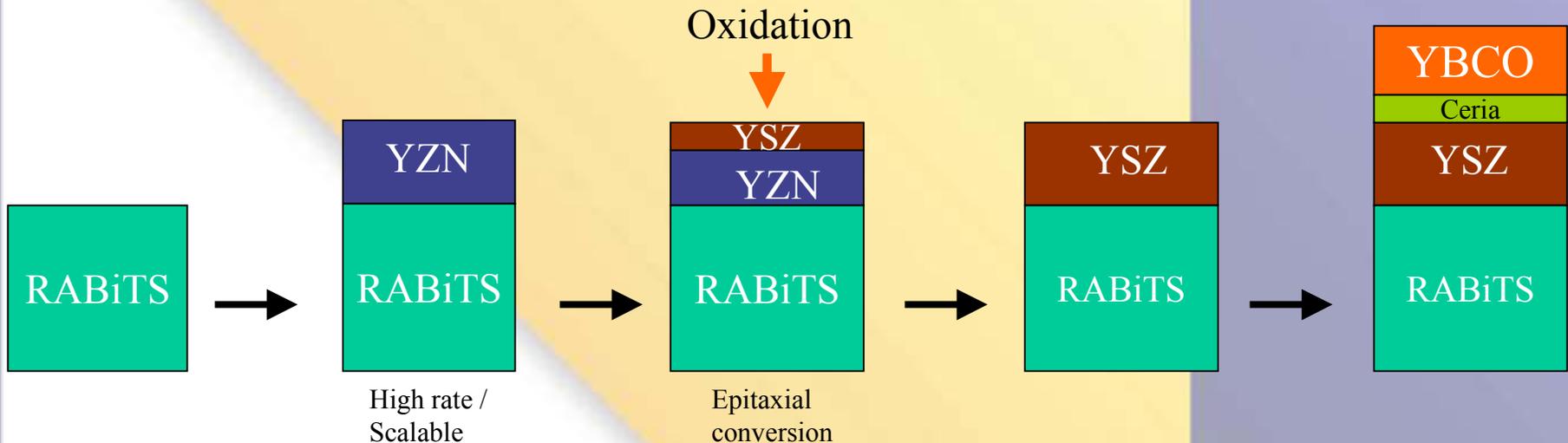




ECONO™ Process

Epitaxial Conversion to Oxide via Nitride Oxidation

Deposit epitaxial (Y,Zr)N by reactive magnetron sputtering and convert to YSZ by thermal oxidation



- *Eliminates need for seed layer, nickel interlayer, or sulfur superstructure*
- *High rate reactive sputtering yields high quality films*
- *Wide processing window*
- *Non-exclusive license executed with HTS manufacturer*



Current Status

- Short length demonstration
 - 1 MA/cm² J_c on Ni/YSZ/CeO₂/YBCO
 - ~0.5 MA/cm² J_c on Ni-W substrates (TFA)
- Licensee has demonstrated YZN deposition on 5 meter long lengths ($\Delta\varphi \sim 7^\circ$)
- Optimization of YZN deposition on Ni-W and oxidation (p_{O_2} , surface morphology, density, and YSZ texture)
- ECONO optimization on Ni-W (BMDO Ph II SBIR)
 - Compositional tailoring to optimize oxidation resistance, YZN texture, and incorporation of ceria cap through nitride conversion
 - Optimization of YZN oxidation (p_{O_2} , surface morphology, density, and texture)
 - Process design for economical production in long lengths