# Dry Resist Patterning Progress and Readiness Towards High NA EUV Lithography

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Extreme ultraviolet dry resist deposition and development technology aims to break the tradeoffs among resolution, sensitivity, roughness, and defect performance to enable HVM with improved productivity. An all EUV dry resist technology offers differentiating process knobs that can enhance performance compared to conventional EUV resists. Superior performance of dry resist has been validated through electrical readout at test vehicles available at most aggressive pitches available on current 0.33NA scanner. In this talk, we aim to demonstrate the progress of dry resist development to address specific challenges of high NA EUV lithography. As features scales, resist thickness and interface between resist and underlayer play a crucial role. The co-optimization of underlayers with dry technology enables tuning of the patterning stack for optimal performance. Dry deposition of resists offers precise control over thickness and composition to improve material variability. Dry development reduces the likelihood of pattern collapse and enhances the ability to print features at higher aspect ratio. Furthermore, dry resist patterning performance at pitch 24nm dense line-space and pitch 34nm hexagonal dense pillars and contact holes will be presented showing the readiness towards the high NA EUV patterning. Dry resist performance at thinner resist thickness along with its impact on metrology will also be discussed.