



**Figure 1** EOT – POT curves of each dielectric material (undoped ZrO<sub>2</sub>, ZAZ, ZYZ, and ZYZYZ) based MIM capacitors. The thickness of the top ZrO<sub>2</sub> layer (denoted as “POT minus 2.4”) was also demonstrated in order to calculate the y-intercept of each slope, which implies the effective EOT of the [bottom ZrO<sub>2</sub> (~ 2.1 nm) / insertion layer (~ 0.3 nm)] in the case of ZAZ and ZYZ films.