

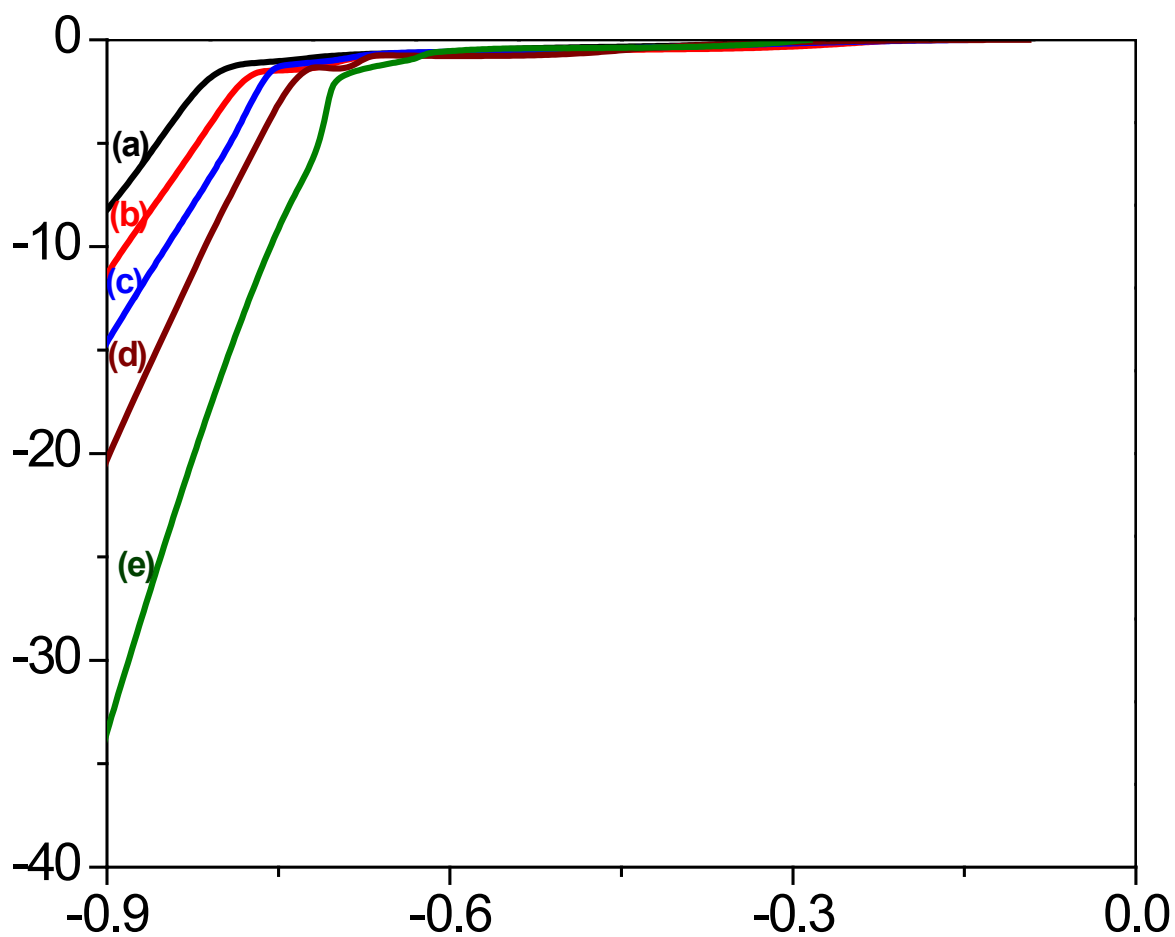
*Supplementary Material***1** Supplementary Figures

Figure S1. LSV curve of TeO_3^{2-} in alkaline solutions with different TeO_3^{2-} concentration: (a) 25, (b) 50, (c) 100, (d) 300 and (e) 550 mM at pH of 12.0 and temperature of 23 °C. Thick Te films were used as substrate.

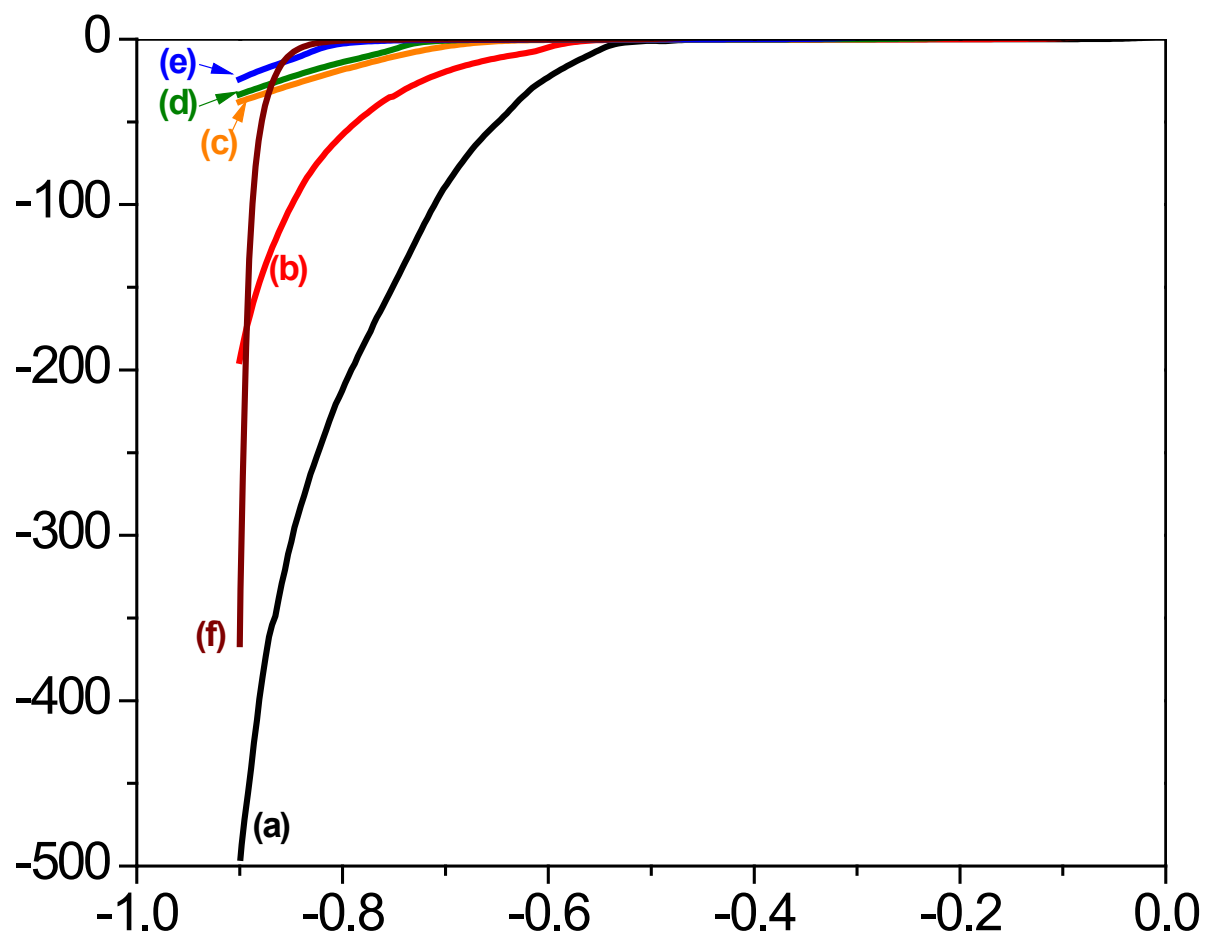


Figure S2. LSV curve of TeO_3^{2-} in alkaline solutions at different pH: (a) 10.2, (b) 11.0, (c) 12.2, (d) 12.5, (e) 13.1 and (f) 14.7. TeO_3^{2-} concentration was fixed at 550 mM and temperature was fixed at 23 °C. Thick Te films were used as substrate.

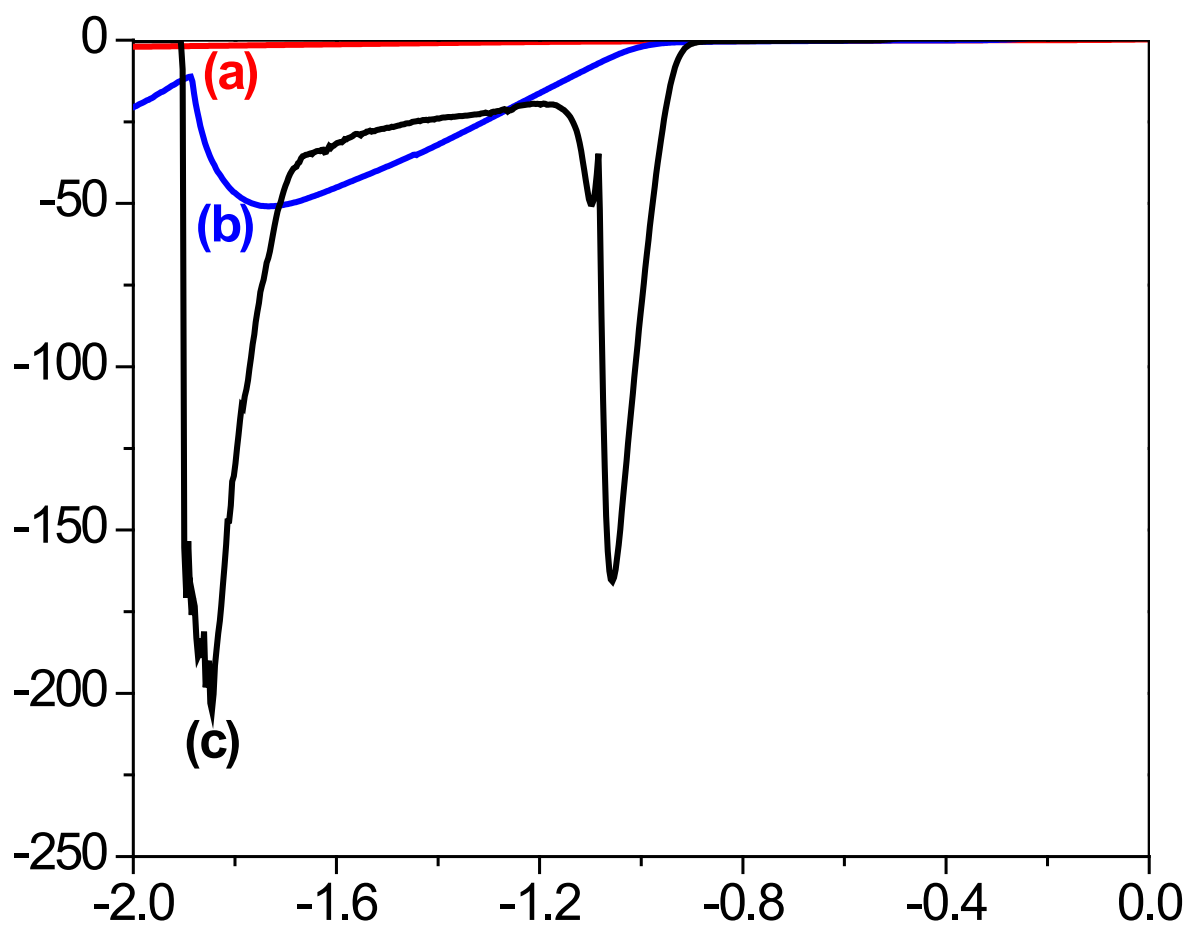


Figure S3. LSV curve of Te in alkaline solutions at different pH: (a) 10.2, (b) 12.5 and (c) 14.7. TeO_3^{2-} concentration and temperature were fixed at 0 mM and 23 °C, respectively. Thick Te films were used as substrate.

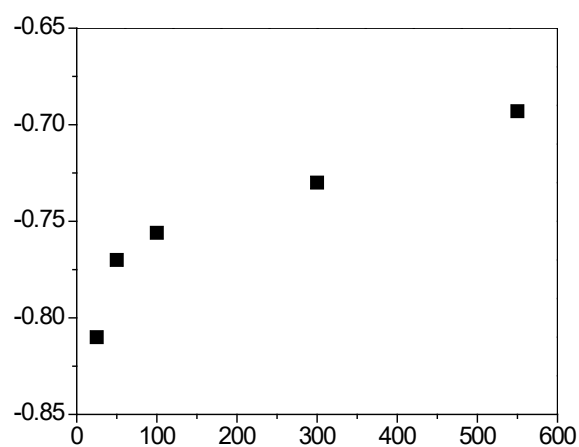


Figure S4. Onset potential of TeO_3^{2-} reduction reaction in alkaline solutions with different TeO_3^{2-} concentration (25, 50, 100, 300 and 550 mM) at pH of 12.0 and temperature of 23 °C. Thick Te films were used as substrate.

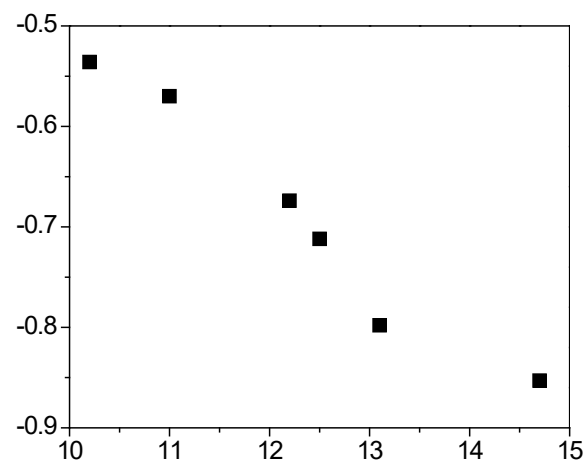


Figure S5. Onset potential of TeO_3^{2-} reduction reaction in alkaline solutions at different pH (10.2, 11.0, 12.2, 12.5, 13.1 and 14.7). TeO_3^{2-} concentration was fixed at 550 mM and temperature was fixed at 23 °C. Thick Te films were used as substrate.

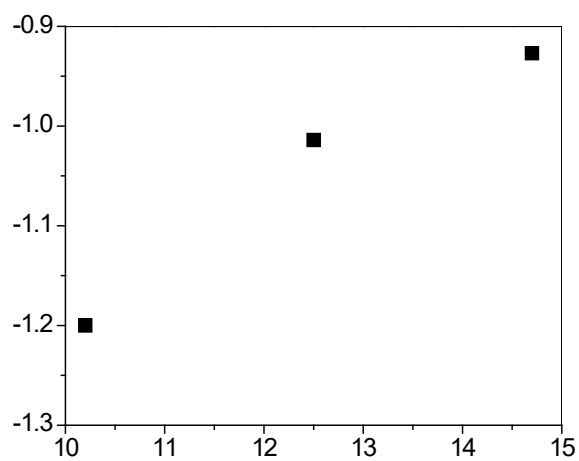


Figure S6. Onset potential of Te reduction reaction in alkaline solutions at different pH (10.2, 12.5 and 14.7). TeO_3^{2-} concentration was 0 mM and temperature was fixed at 23 °C. Thick Te films were used as substrate.

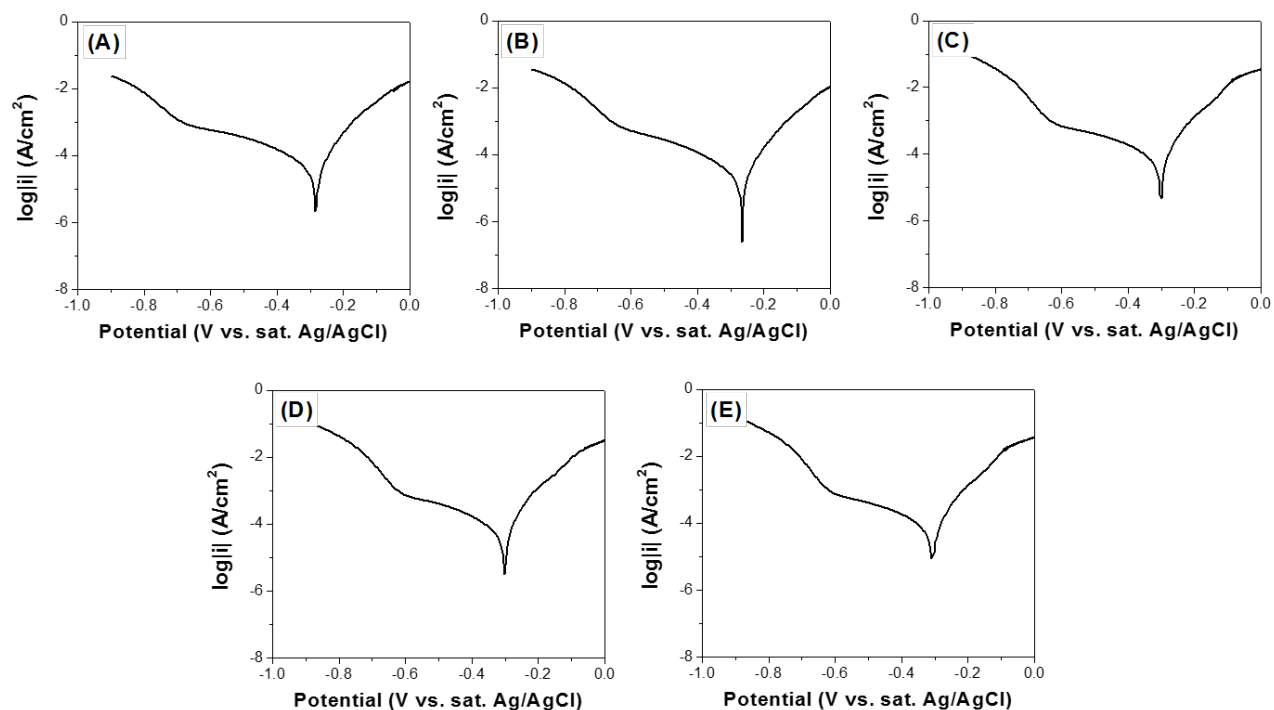


Figure S7. Tafel plot of TeO_3^{2-} reduction in alkaline solutions with different $[\text{TeO}_3^{2-}]$. (A) 50, (B) 100, (C) 300, (D) 400, (E) 550 mM. The experiments were conducted using Te as a substrate at pH of 12.0 and temperature of 23 °C.

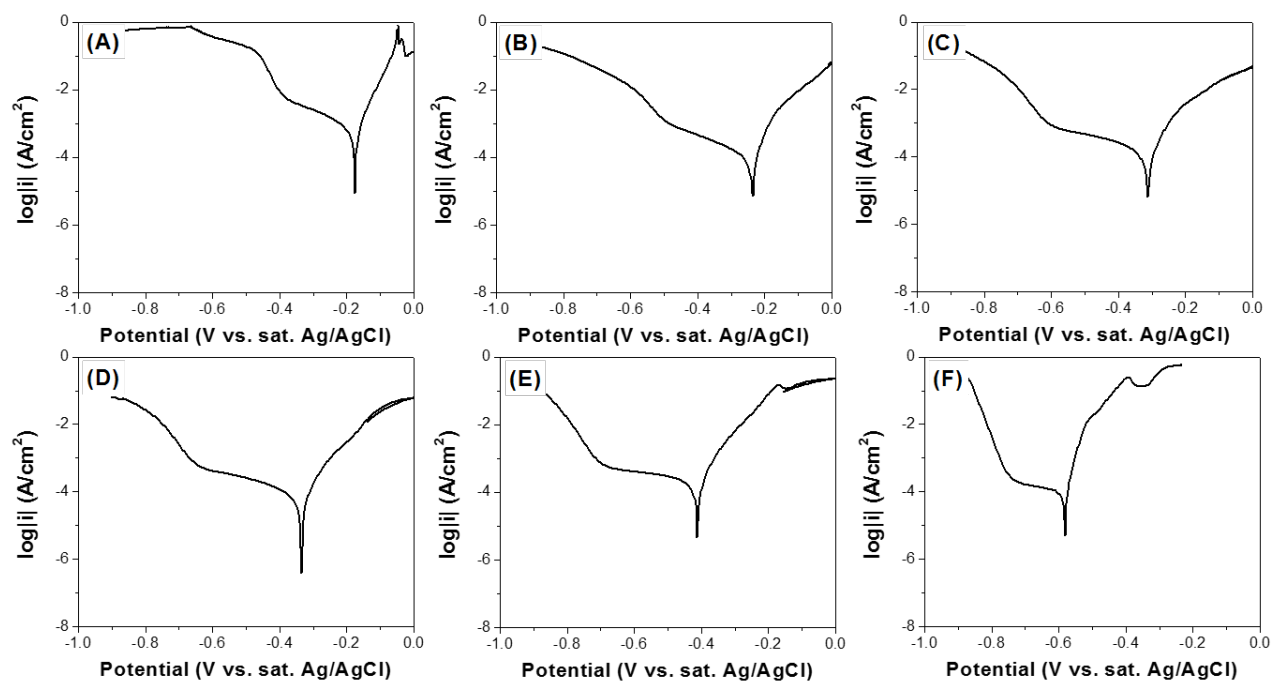


Figure S8. Tafel plot of TeO_3^{2-} reduction in alkaline solutions with different pH: (A) 10.2, (B) 11.0, (C) 12.2, (D) 12.5, (E) 13.1, (F) 14.7 (calculated value). The experiments were conducted using Te as a substrate at $[\text{TeO}_3^{2-}]$ of 550 mM and temperature of 23 °C.

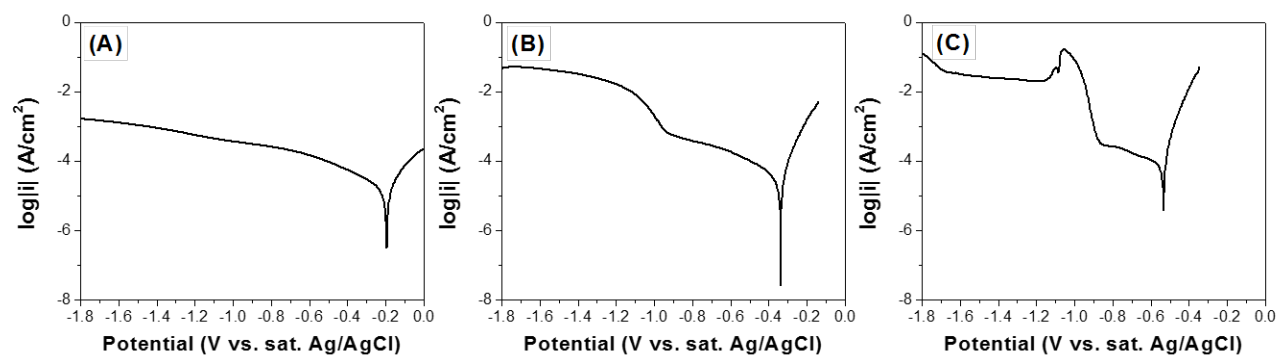


Figure S9. Tafel plot of Te dissolution in alkaline solutions with different pH: (A) 10.2, (B) 12.5 and (C) 14.7(calculated value). The experiments were conducted using Te as a substrate at $[\text{TeO}_3^{2-}]$ of 0 mM and temperature of 23 °C.