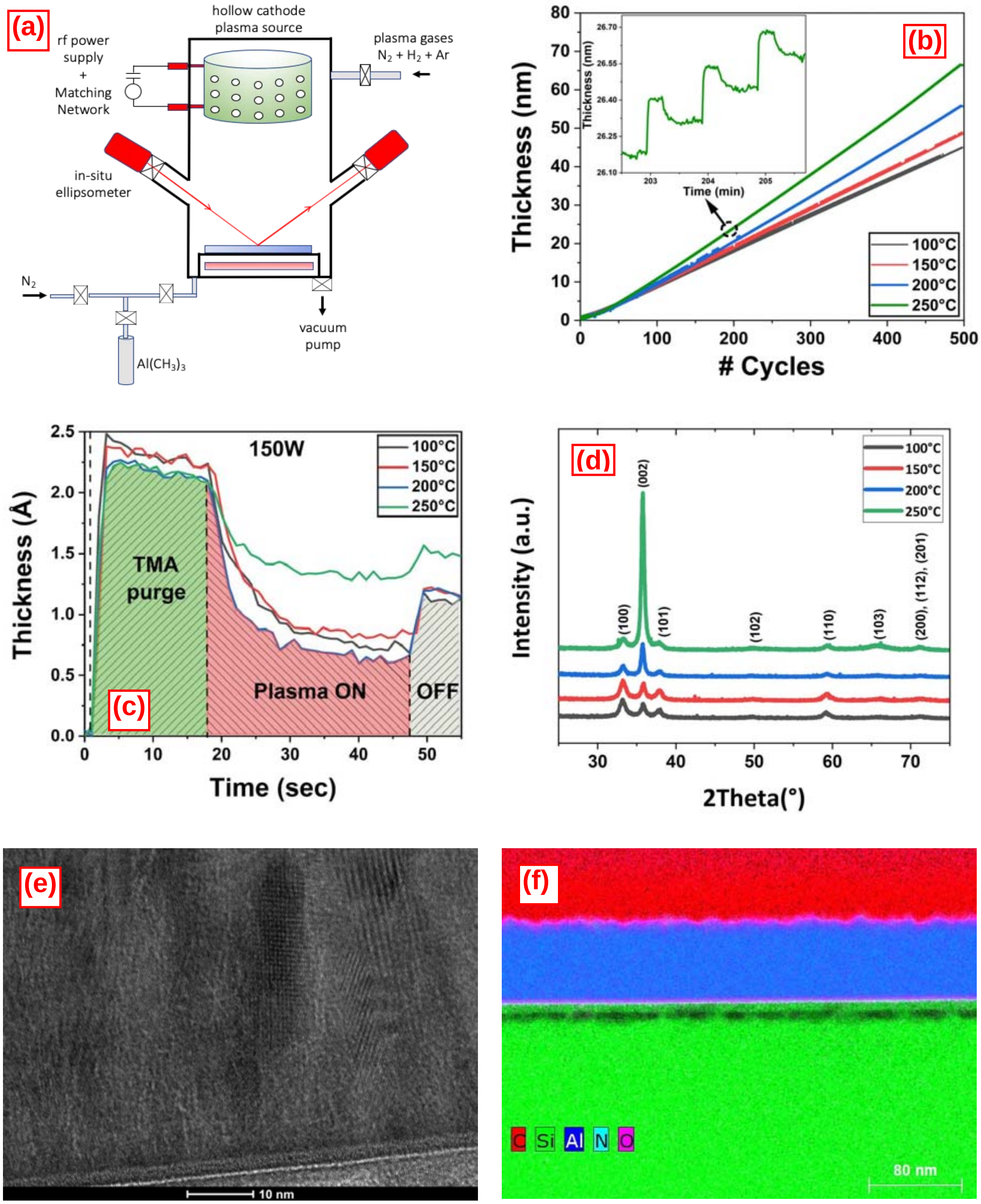

Fig. 1. (a) Schematic of the plasma-ALD reactor featuring hollow-cathode source and in-situ ellipsometer. (b) 500-cycle linearity curves of the AlN growth process. (c) *In-situ* ellipsometric film thickness data showing the chemisorption and ligand exchange reactions. (d) GIXRD measurement spectra for AlN samples as a function of substrate temperature. (e) HR-TEM image of the ALD-grown AlN film depicting the polycrystalline domains (f) Elemental mapping of the cross-sectional TEM image for AlN confirming the low carbon and oxygen impurities within the film bulk.