Controlling phase selection, preferred orientation, and van der Waals or conventional epitaxy in molybdenum oxide films

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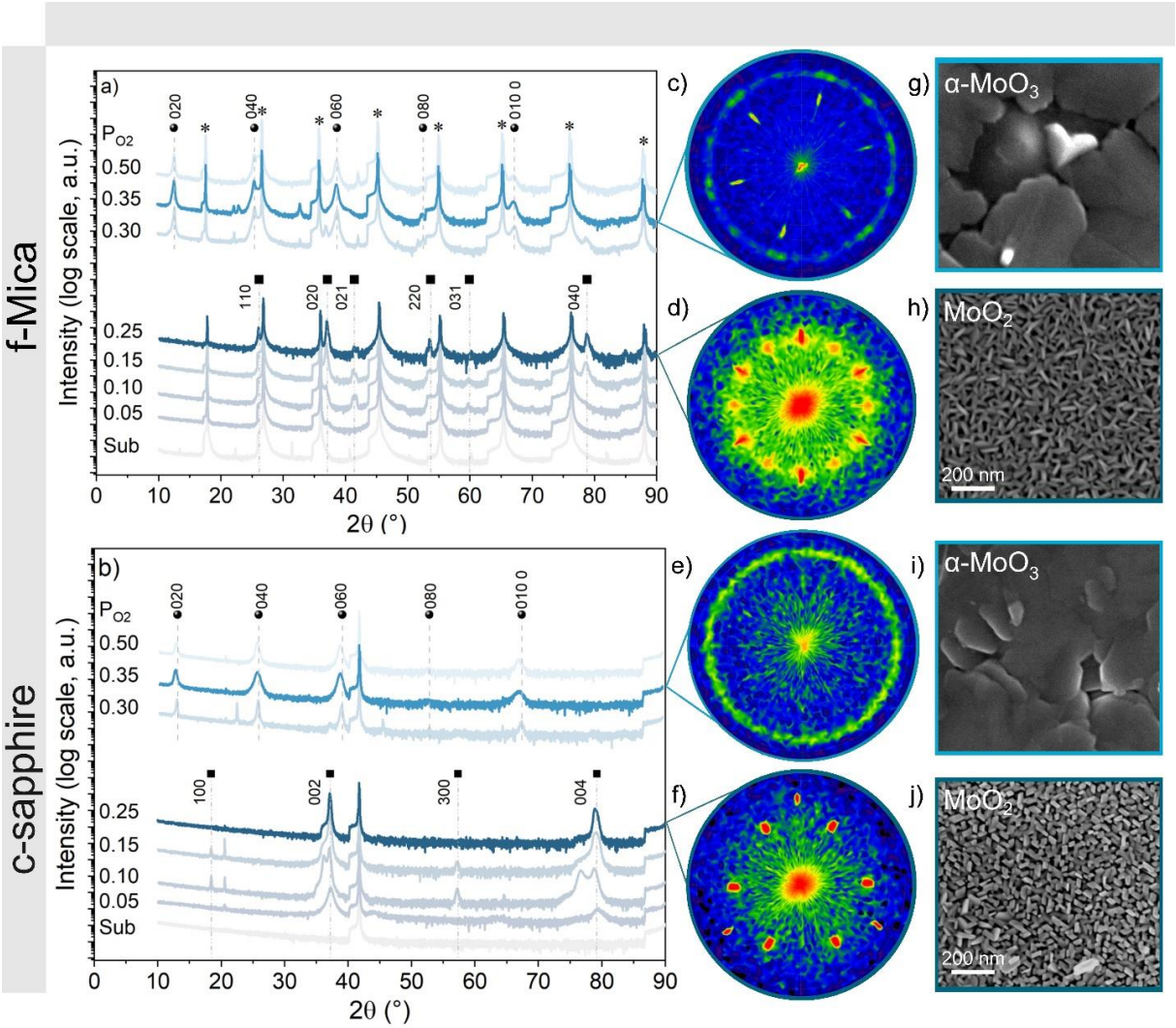

Fig.1. X θ-2θ scans from MoO_x films deposited at T_s = 400 °C with $0.05 \leq p_{O_2} \leq 0.5$. Highlighted diffractograms show orthorhombic α-MoO_3 at $p_{O_2} = 0.35$ and monoclinic MoO_2 at $p_{O_2} = 0.25$, deposited on f-mica (a), and c-sapphire (b).

X-ray pole figure scans of orthorhombic α-MoO_3 {021} Bragg reflections at 2θ = 27.31˚, deposited at $p_{O_2} = 0.35$ on f-mica (c) and on c-sapphire (e).

X-ray pole figure scans for monoclinic MoO_2 {110} Bragg reflections at 2θ = 25.99˚, deposited at $p_{O_2} = 0.25$ on f-mica (d) and on c-sapphire (f).

SEM micrographs of orthorhombic α-MoO_3 films deposited at $p_{O_2} = 0.35$ on f-mica (g) and c-sapphire (i), and monoclinic MoO_2 film deposited at $p_{O_2} = 0.25$ on f-mica (h) and c-sapphire (j).