It has been proposed to use the 220 reflection of LiF with a multilayer deposited upon the top for simultaneous spectroscopy near Fe-k and O-k and below the C-k absorption edge (284 eV) in x-ray astronomy. We demonstrate that a substantial reduction of surface roughness is obtained by dip lacquering state-of-the-art polished LiF(220) surfaces. Using a microdensitometer analysis of electron micrographs of surface replicas and x-ray reflection, we have measured ∼ 10-Å rms roughness of Au-coated dip-lacquered LiF(220) crystals, as opposed to ∼ 60 Å measured on the bare LiF(220) crystal surface.