

GROWING THIN FILMS WITH ONLY ONE HAND

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It has recently been demonstrated that metal surfaces with a chiral or "handed" surface structures have the potential to separate mixtures of right and left handed molecules; this is an essential step in the production of all pharmaceuticals. However, to make any system based on this discovery affordable, it is necessary to produce large area thin films with the same structure. A three-step process has been developed for the deposition of chiral surfaces on Pt and Cu films using pulsed laser deposition. Structural studies show that the flat films expose their (621) surfaces, thus demonstrating that the chirality of the ceramic substrate can be propagated to the surface of the metal film. This technique, called homochiral heteroepitaxy, produces thin films that expose surfaces of only one hand.

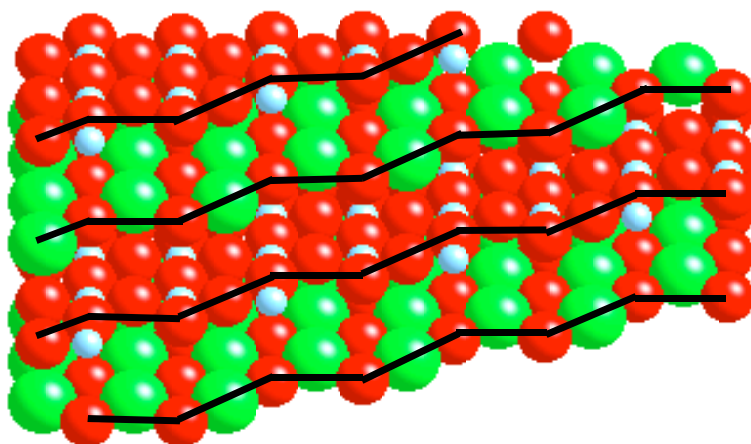


Figure: Atomic structure of the chiral (621) SrTiO_3 surface used to seed the growth of homochiral Pt and Cu. Blue: Ti, Red: O, Green: Sr. The black lines trace the step edges.