InSb(100)基板の準備

	基板の情報	手続き	表面状態の確認
[1]		Inリッチな表面を洗浄するため、Arスパッタ(500eV)とアニール(660K)を繰り返す	X線回折から550Kと660Kで表面状態の再構成が確認できた
[2]	研磨済み/ 寸法: 7x7x1.2mm	Arスパッタ(500eV)とアニール	アニール後、RHEEDスペクトルにピークが見えた
[3]		Arスパッタ(500eV)とアニール(400℃)を繰り返す	LEEDスペクトルに(4x2)のピークが見えた
[4]	nドープ ($n \sim 9\times10^{17}$ cm^{-3})	Arスパッタ(500eV)とアニール(660K)を繰り返す	LEEDスペクトルに(8x2)のピークが見えた
[5]	ドープなし (抵抗率1.3×10^{-1} V cm)	Arスパッタ(500eV)とアニール(400℃)を繰り返す	
[6]	研磨済み	CP-4Aに2分つけて、Arスパッタ(500eV/1h/0.4μA/min)とアニール(300℃/20min)	
[7]	nドープ (n_D-$n_A \sim 10^{14}$ cm^{-3}, $\mu \sim 5x10^5$ cm^2 V^{-1} s^{-1} at 77K)	ダイアモンドペーストで機械的に研磨したあと、溶媒につけてエッチング。真空チャンバーに入れる前にiso-propyl alcoholでリンス。	

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[1] https://doi.org/10.1016/S0039-6028(02)01267-0
The InSb(100) clean surface was prepared by repeated cycles of Ar sputtering (ion energy 0.5 keV) and annealing at 660 K, in order to avoid In- enriched surfaces. The quality of the surface re- construction was inferred from the angular widths Dh and Dk of the fractional order X-ray diffraction reflections. At the annealing temperature of 550 K a sharp (1 4) reconstruction was observed, with a coherence length of about 200 A#. By increas- ing the annealing temperature to 660 K, the characteristic pattern of the well-reconstructed InSb(1 0 0) surface is formed, and clear c(2 8) fractional order peaks appear. At higher annealing temperatures (680 K), a better c(2 8) recon- struction was observed but the surface resulted In enriched (as deduced from intensity ratio analysis of the Auger peaks).

[2] https://doi.org/10.1016/0040-6090(84)90329-8
Oriented and polished crystal plates of InSb of area 7 mm x 7 mm and thickness 1.2 mm were cleaned by sputtering with argon ions of energy 500 eV. After the sputter damage had been annealed these surfaces showed well-developed reflection high energy electron diffraction (RHEED) patterns.

[3] https://doi.org/10.1063/1.1369416
InSb(100) single crystals were cleaned by repeated cycles of500eV Ar-ion sputtering followed by annealing at 400°C. We observed sharp (4X2) low energy electron dif- fraction patterns characteristic of In-terminated surfaces.

[4] https://doi.org/10.1016/S0039-6028(00)00155-2
The n-type doped (9×1017 cm−3) InSb(100) single crystals were prepared with repeated cycles of soft sputtering (500eV) and annealing (up to 400°C). The clean substrates showed a sharp c(8×2) reconstructed surface, as monitored by LEED.

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[5] https://doi.org/10.1016/S0039-6028(99)00110-7
Well-cut, oriented and polished InSb(111) nominally undoped (1.3×10−1 V cm resistivity) crystals were cleaned by repeated cycles of 500 eV Ar+ ion sputtering followed by annealing at 400°C

[6] https://doi.org/10.1016/0039-6028(92)90469-M
Prior to loading in the UHV chamber, the InSb sample was dipped in a CP-4A etchant for 2 min to remove any polishing damage. The surface was cleaned in-situ by ion bombardment and an- neal cycles (500 V Ar ions for 1 h at 0.4 PA/cm*; anneal, 20 min at 300°C). Sn layers were likewise removed after deposition.

[7] https://doi.org/10.1016/0022-0248(81)90506-6

InSb(001) orientation wafers (n-type, n_D-n_A~10^{14} cm^{-3}, μ~5x10^5 cm^2 V^{-1} s^{-1} at 77K) were mechanically polished using diamond paste and subsequently subjected to a free etch in a porprietry oxidizing solution by the manufacturers (MCP Electronic Materials Ltd.) Immediately prior to loading the wafers were rinsed in hot iso-propyl alcohol.