

“AlSiCu-settlement” shows the results from a directional solidification experiment with the imposed temperature gradient parallel to gravity in a Al-9wt%Si-15wt%Cu-0.015wt%Sr alloy. The video shows the effect of melt flow on the  $\alpha$ -Al and Sr-modified Al-Si eutectic growth. The sequence has not yet been thoroughly analyzed, but presumably the net flow field can be prescribed to a combination of two flow fields. One is on a micro to mesoscopic scale and stems from gravity induced settlement of the Cu-enriched heavier melt out of the interdendritic mushy zone. The second flow field is macroscopic and stems from convection as directional solidification parallel with gravity is bound to be thermosolutally unstable. In addition to the thermosolutal convection, it is also assumed from observations in this and many other video sequences taken with  $\mathbf{G}$  both parallel and anti-parallel to  $\mathbf{g}$ , that there is appreciable horizontally directed heat advection with the current sample cell design. The sequence has been colorized to illustrate fluid flow of the Cu-enriched melt. The color table applied is black-blue-green-red- orange-yellow in full analogy to a black to white grayscale. Colors/grayscale are directly related to X-ray transmission, leaving the color contrasts to be fully related to the local melt Cu-concentration.