the c–axis oriented $LuNi_2B_2C$ phase is considerably increased. All in all, the c–axis texture of the borocarbide phase is almost perfect. (2) A perfectly [110]–textured Lu_2O_3 phase is observed in the measurements as well. This oxide is most likely formed at the interface via a rare earth oxidation reaction with the substrate as described ny other groups [20, 27]. (3) For high temperatures, an increasing amount of secondary phases is formed indicating strongly increased diffusion reactions. The most pronounced peak found at $2\theta = 49.8°$ can be addressed to a slightly off-stoichiometric Ni_2B phase, which is likely formed during the lutetium oxidation at the substrate interface. A similar phase was was already found in earlier studies on YNi_2B_2C films [21]. Based on those results, it is assumed that this impurity phase is most probably located within the interface region as well.

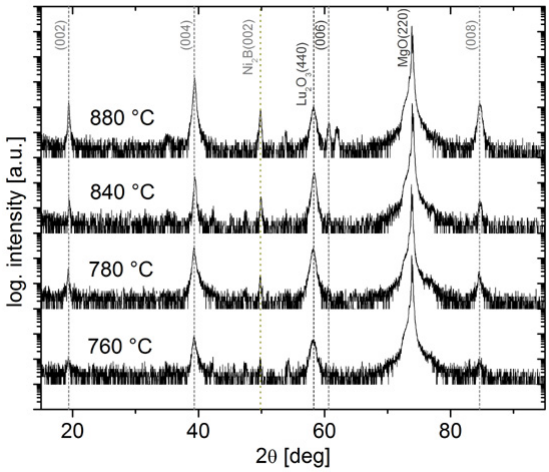

FIG. 2: X-ray measurements of $LuNi_2B_2C$ thin films deposited onto MgO(110) substrates at different substrate temperatures (laser repetition rate $f = 20$ Hz). The c–axis texture is almost perfect. The phase formation is clearly enhanced with increasing temperature while for the highest deposition temperature of 880 ℃, an increasing amount of secondary phase formation is observed.

Texture measurements were performed on the prepared samples in order to check the in–plane alignment of the grown films. The results are summarized in Fig. 3. The (112) plane of $LuNi_2B_2C$ was chosen for these investigations as the highest intensity in powder diffraction is exhibited. Due to the tetragonal crystal structure with its double mirror symmetry of the basal plane, one quadrant of the pole figure already contains the necessary information. A sharp peak at $(\phi,\psi) = (45°, 65°)$ is observed in the films deposited at different temperatures.