Summarizing our first two cases we have analyzed here, we conclude that in the regions where the pyroelectric response is a maximum, all dipoles are aligned parallel. This is in agreement with the crystal structure determination of PHTP-NPP, which reports a polar space group[5]. From the current direction we can conclude that both types of crystals are *negatively* charged at their ends, compensated by positive external charges. *This means that the A (nitro) groups are pointing towards the capping faces.* These findings are in complete agreement with the predictions of Markov's theory for the selective mechanism of attachment of dipoles at the capping faces[4,5].

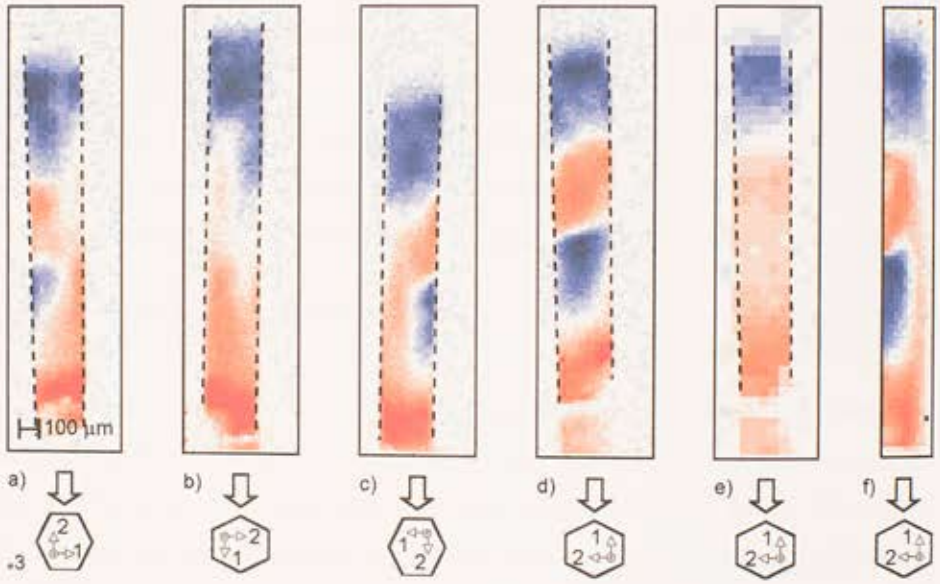

Figure 6: a)-e): SPEM-Images of a PHTP-INBP crystal. a)-d): step-size: 20 µm, $f = 21$ Hz. e): step-size: 50 µm, $f = 1$ Hz. f): pyroelectric spectra taken along the needle axis close to the crystal edge [same view as for d) and e)]. Note that the horizontal axis corresponds to a logarithmically spaced frequency axis [left: 415 Hz, right: 0.1 Hz].

5 Conclusions

The extension of the simple 1D pyroelectric scanning technique to 2D has proven to be a useful tool for mapping the polarization distribution in inhomogeneous crystals. By this new technique we have demonstrated that PHTP-AD crystals grow as 180° twins, and supported by the theoretical considerations of the origin of the pyroelectic effect in these materials, we can assume a negative pyroelectric coefficient along the channel direction. This allows us