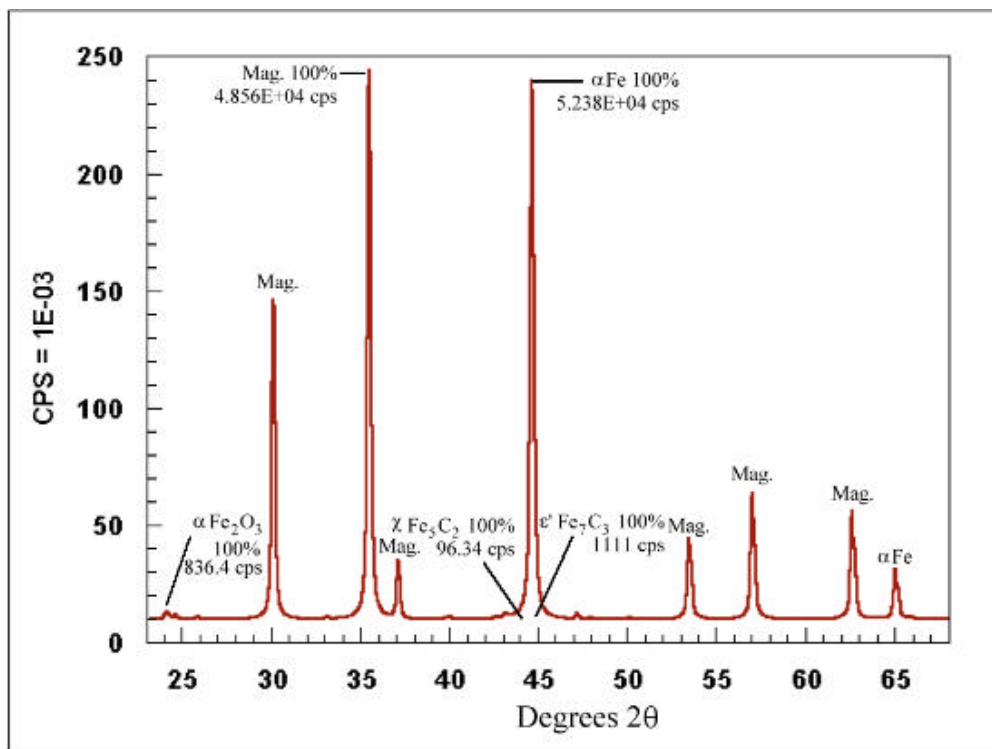
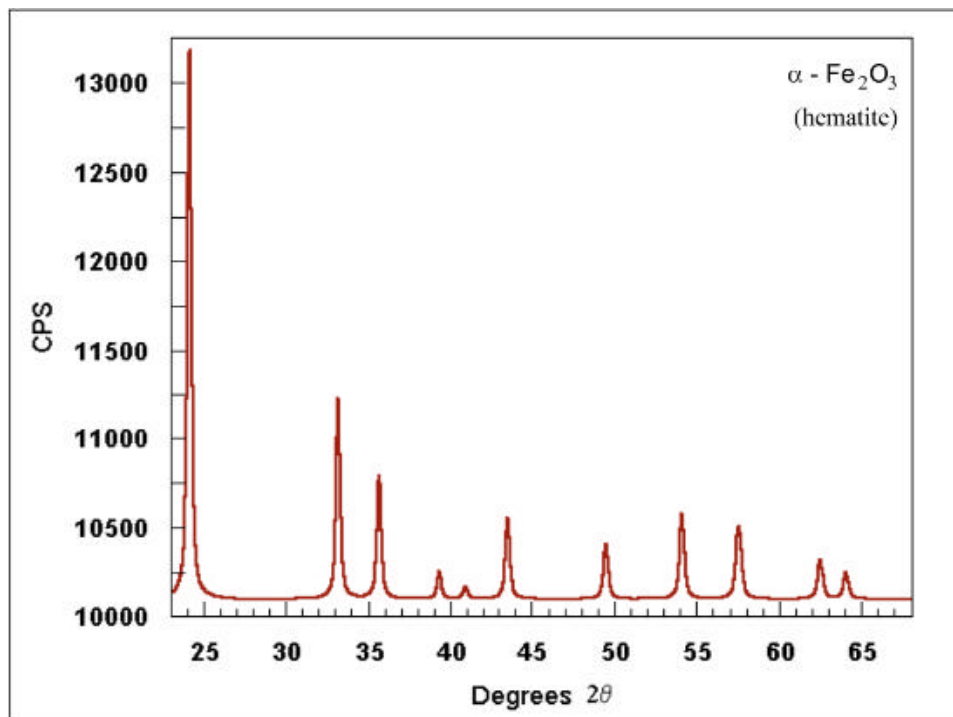


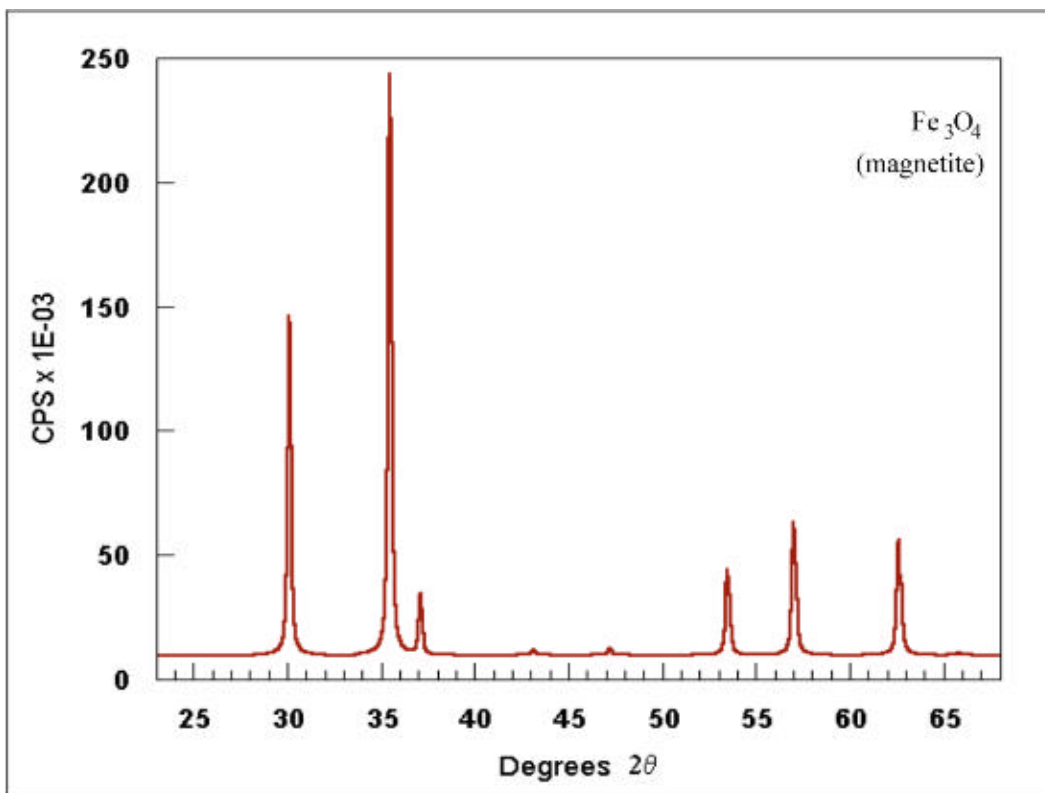
**Figure 1** Simulated X-ray diffraction pattern of a 50:50 wt % mixture of hematite ( $\text{Fe}_2\text{O}_3$ ) and corundum ( $\alpha\text{-Al}_2\text{O}_3$ ). The peak height ratio for the 100% peaks,  $I_{\text{cor}}/I_{\text{hem}}$  is 2.544.



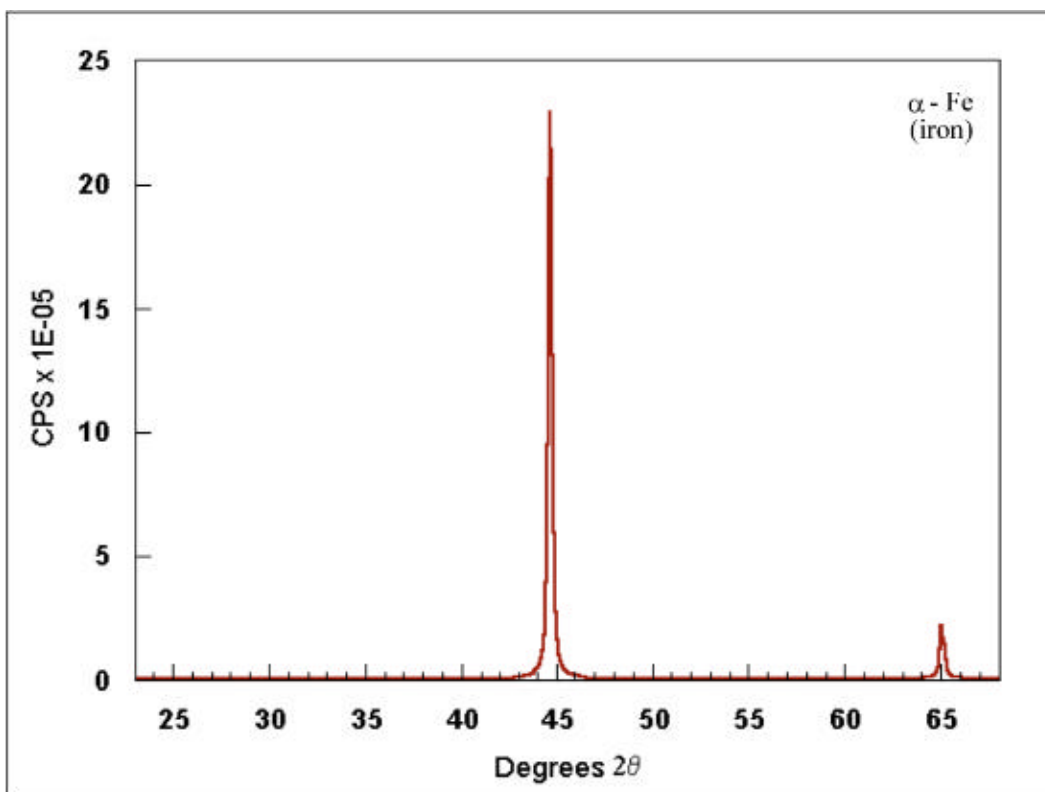
**Figure 2a** a) Simulated X-ray diffraction pattern for a 20 wt% mixture of each of these phases:  $\text{Fe}_2\text{O}_3$ : $\text{Fe}_3\text{O}_4$ : $\alpha\text{-Fe}$ : $\text{Fe}_7\text{C}_3$ : $\text{Fe}_5\text{C}_2$



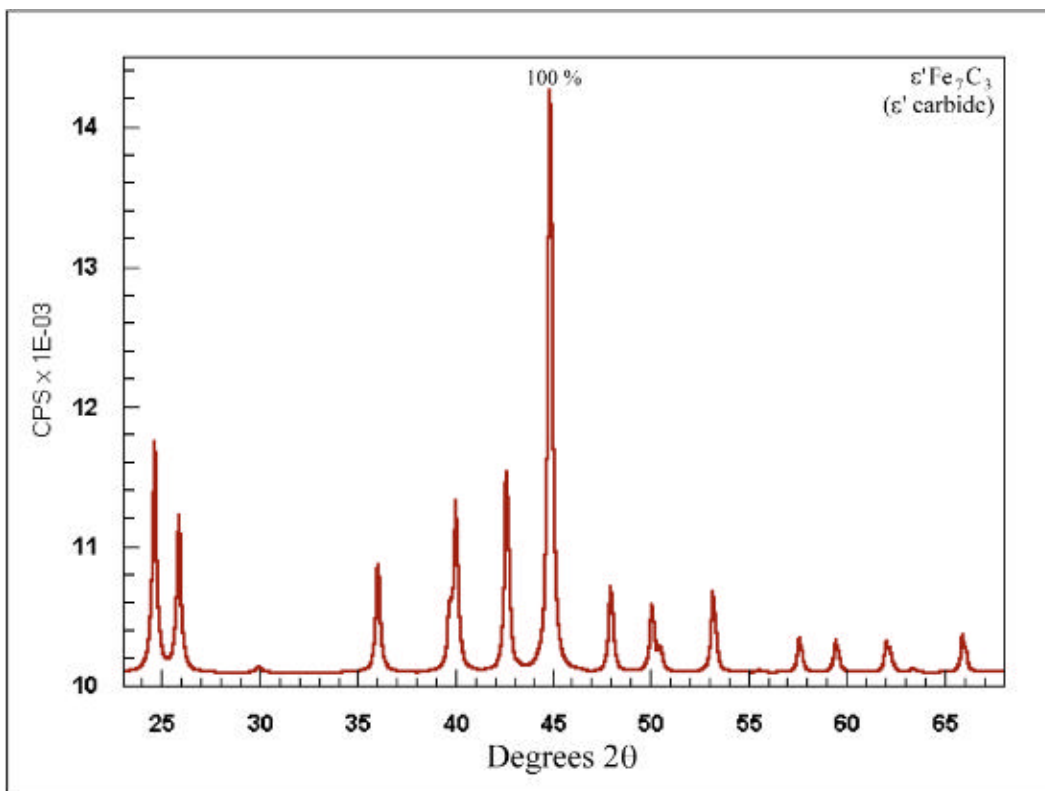
**Figure 2b** Simulated pattern of  $\text{Fe}_2\text{O}_3$  from **figure 2a**, plotted at full scale.



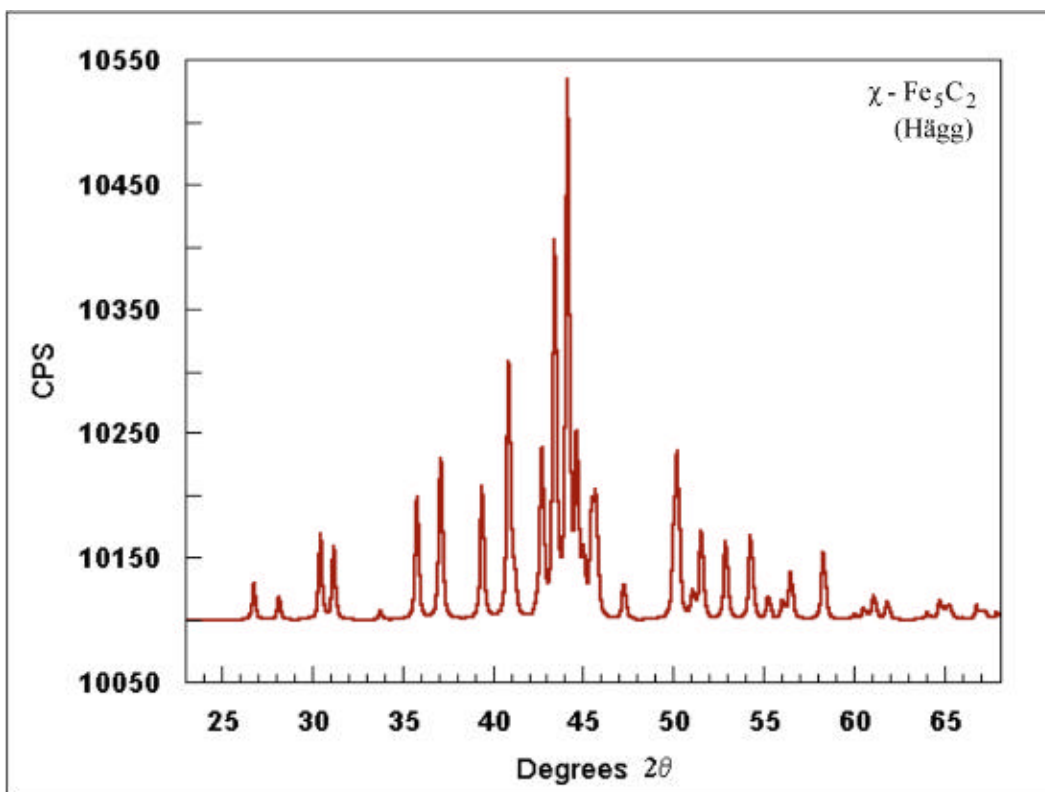
**Figure 2c** Simulated pattern of Fe<sub>3</sub>O<sub>4</sub> from **figure 2a**, plotted at full scale.



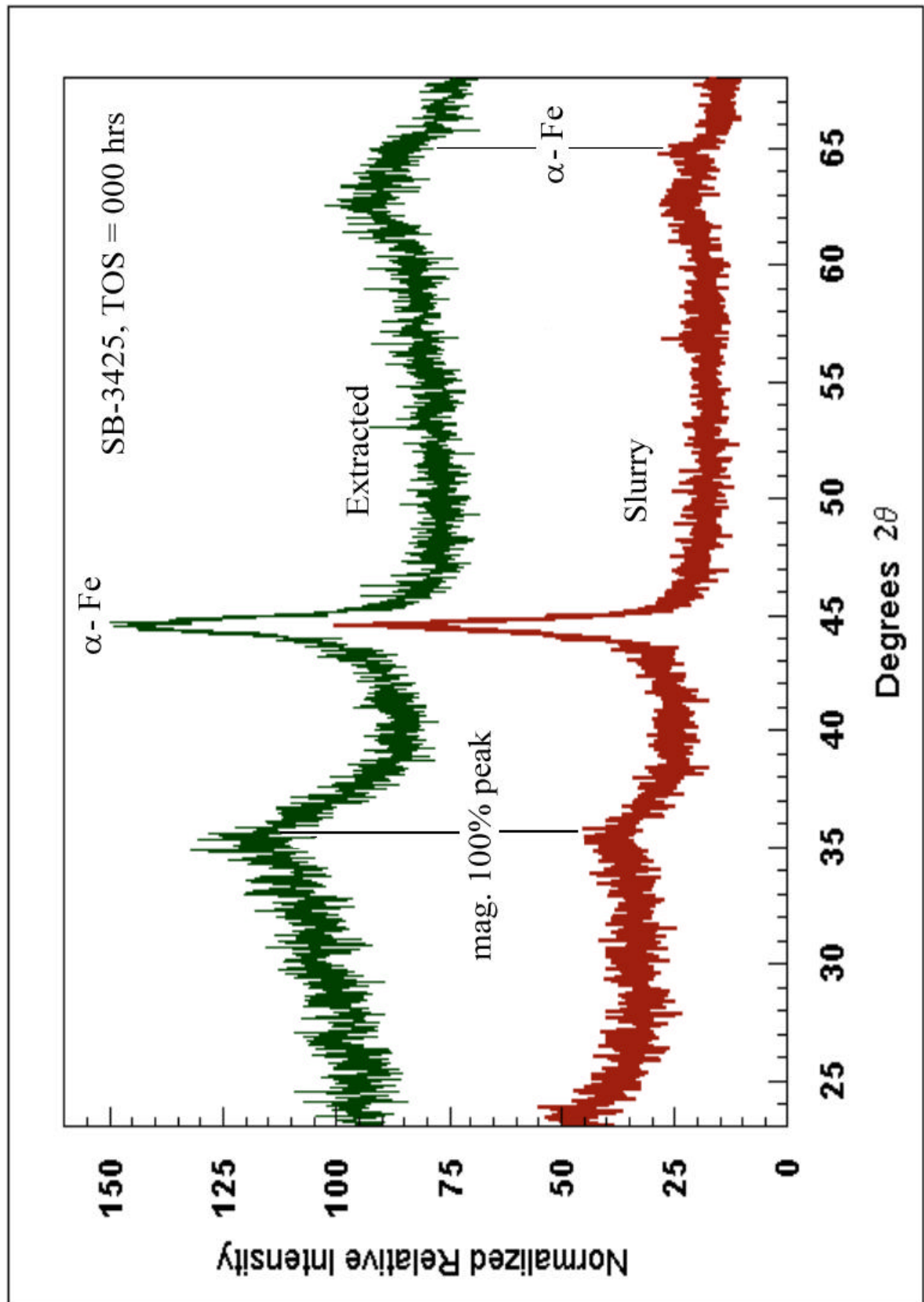
**Figure 2d** Simulated pattern of α-Fe from **figure 2a**, plotted at full scale.



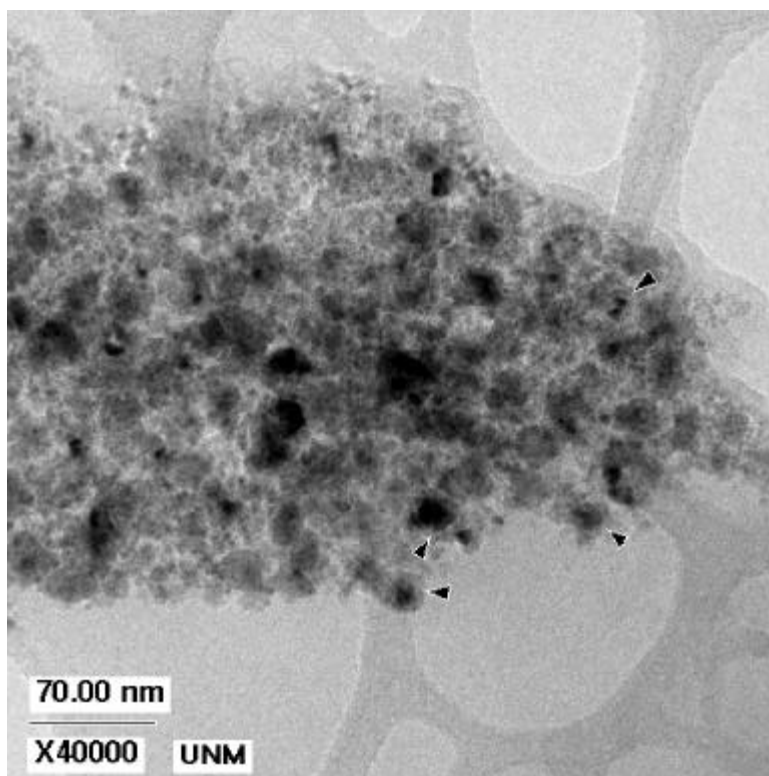
**Figure 2e** Simulated pattern of  $\text{Fe}_7\text{C}_3$  from **figure 2a**, plotted at full scale.



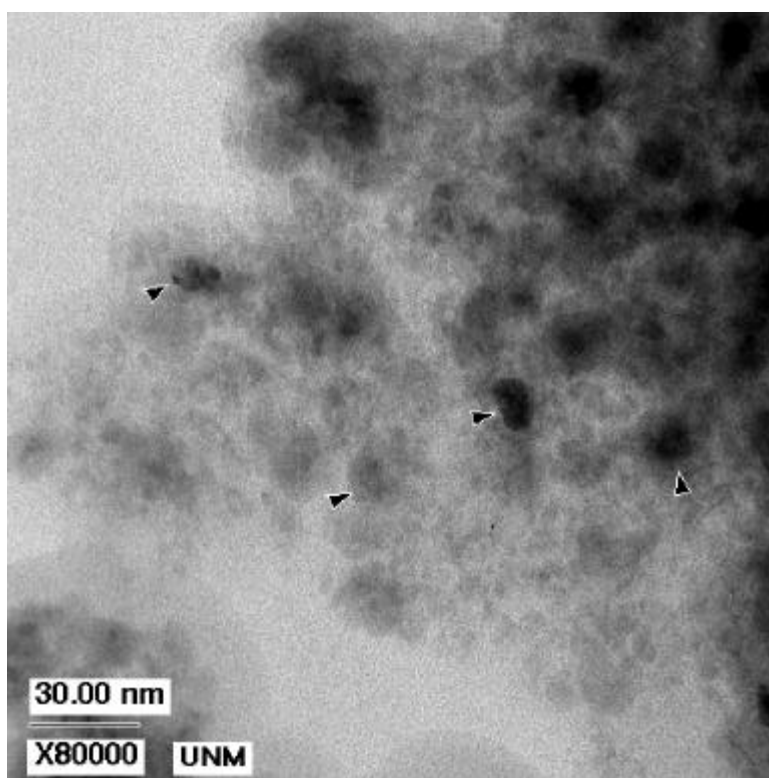
**Figure 2f** Simulated pattern of  $\text{Fe}_5\text{C}_2$  from **figure 2a**, plotted at full scale.



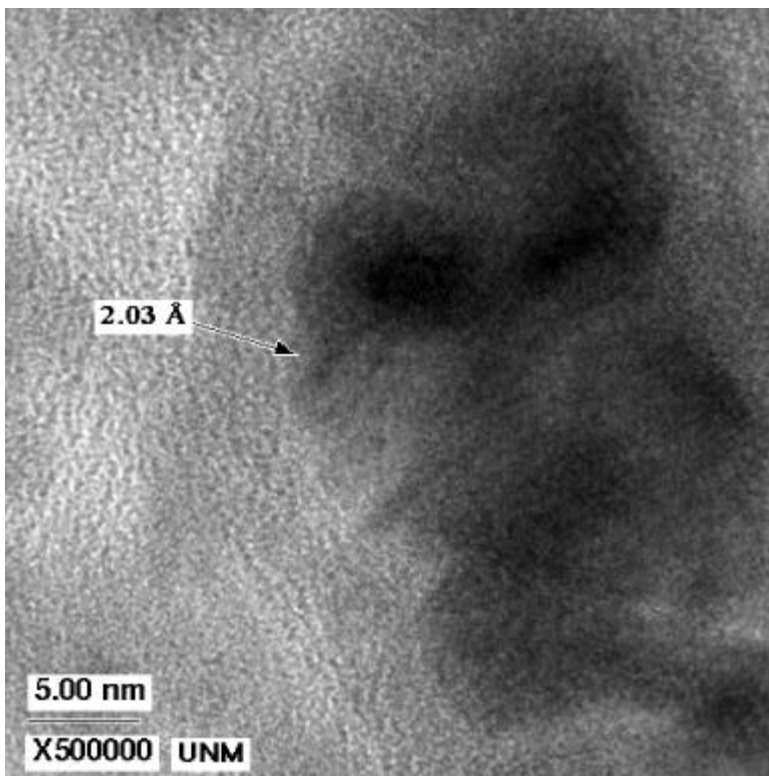
**Figure 3** X-ray diffraction pattern from run SB-3425, TOS = 000 hrs. Lower curve, sample in the oil, and upper curve: powder after soxhlet extraction .



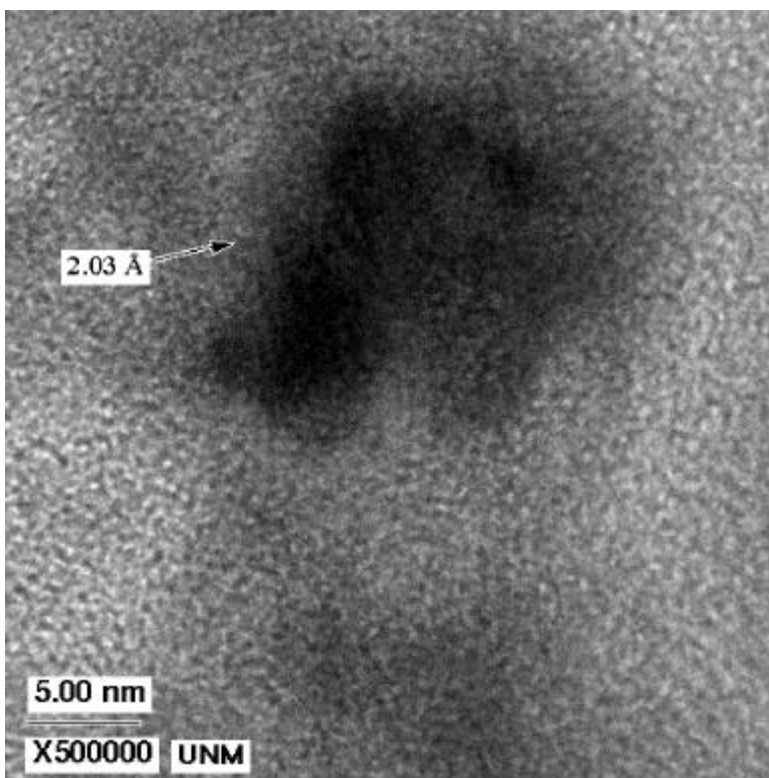
**Figure 4a** Low magnification view of SB-3425, TOS = 000 hrs, extracted powder



**Figure 4b** Low magnification view of SB-3425, TOS = 000 hrs, slurry



**Figure 4c** High magnification view of SB-3425, TOS = 000 hrs, extracted powder



**Figure 4d** High magnification view of SB-3425, TOS = 000 hrs, slurry

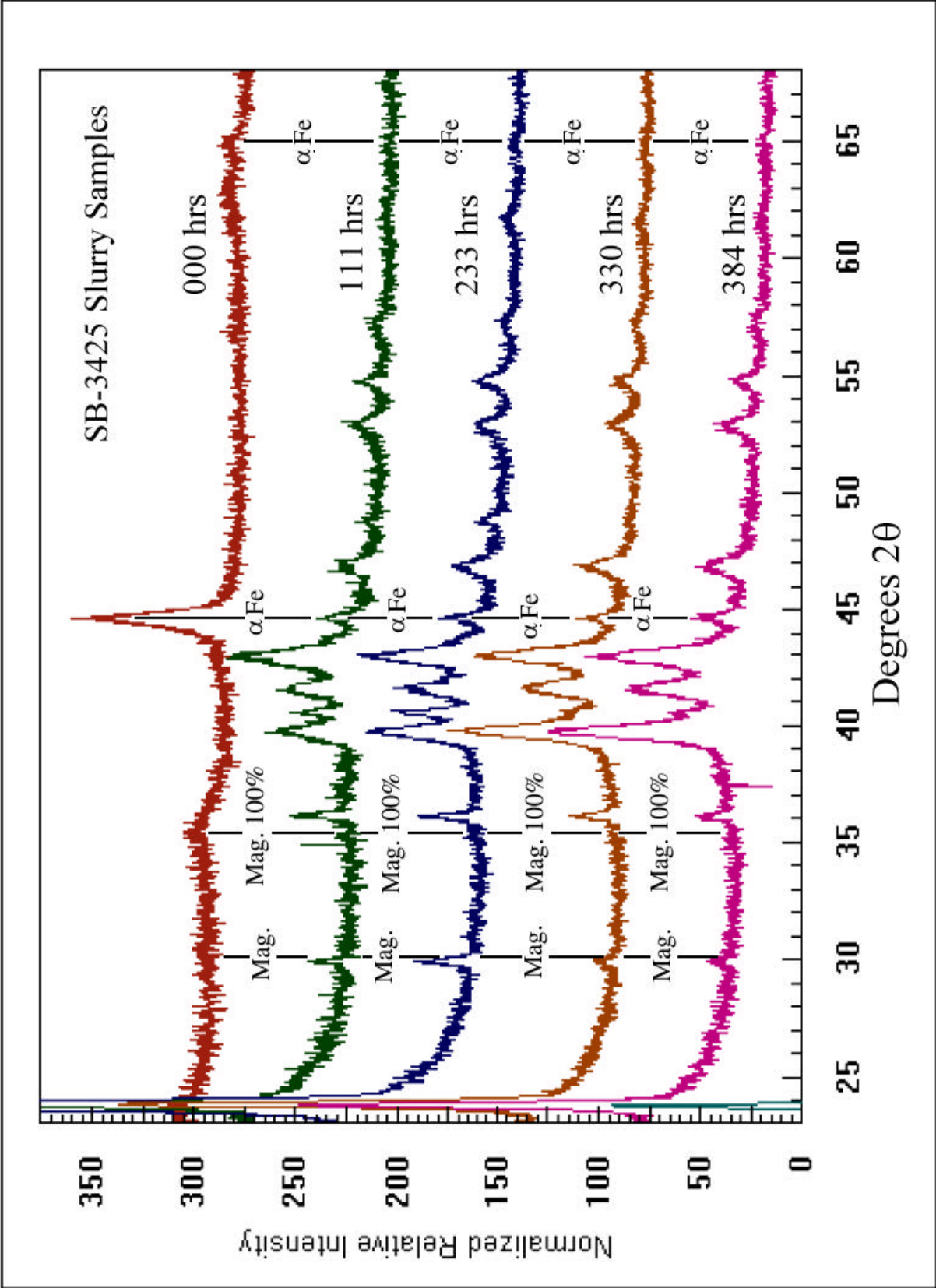


Figure 5a X-ray diffraction of samples from run SB-3425, slurry samples



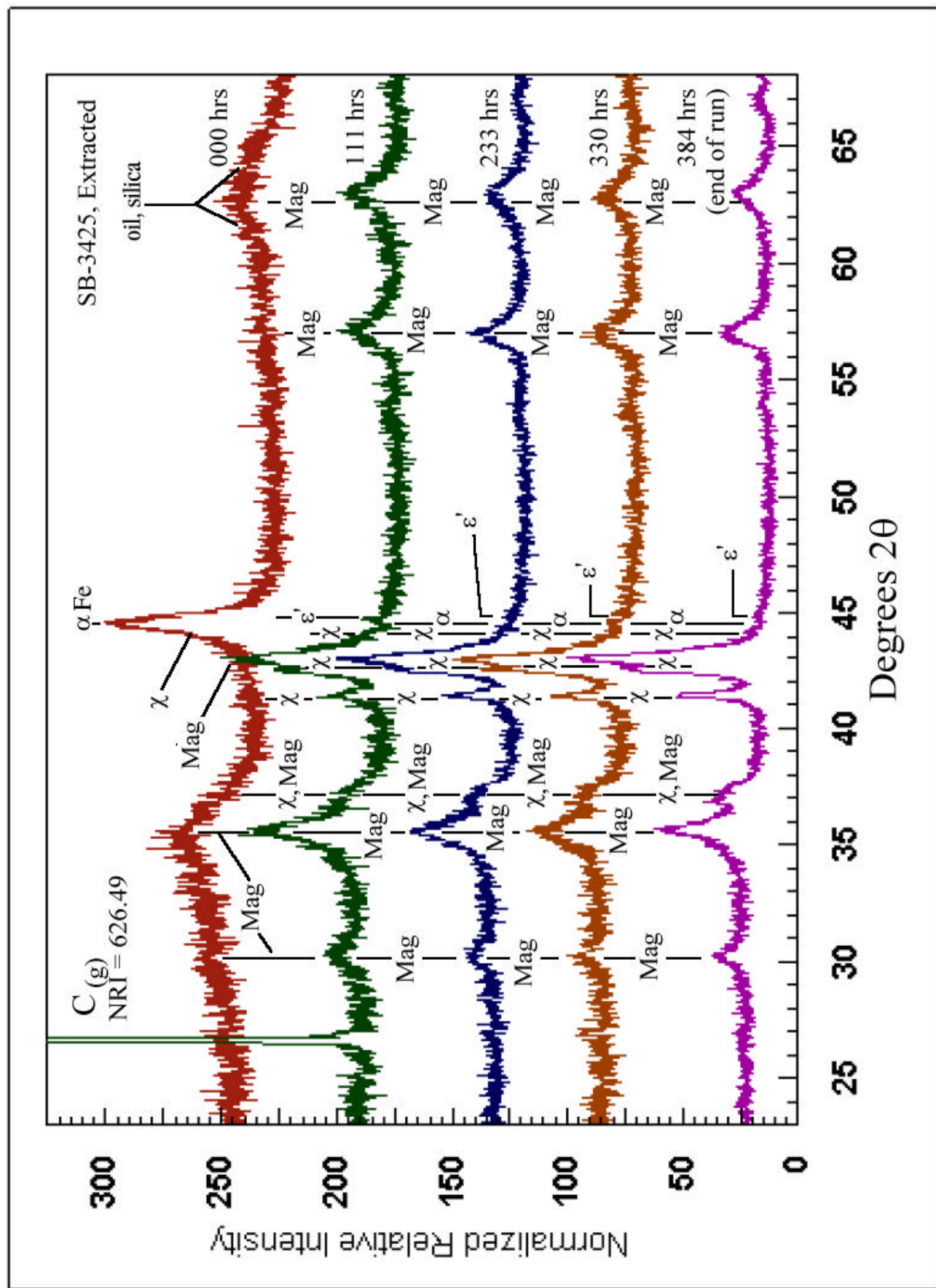
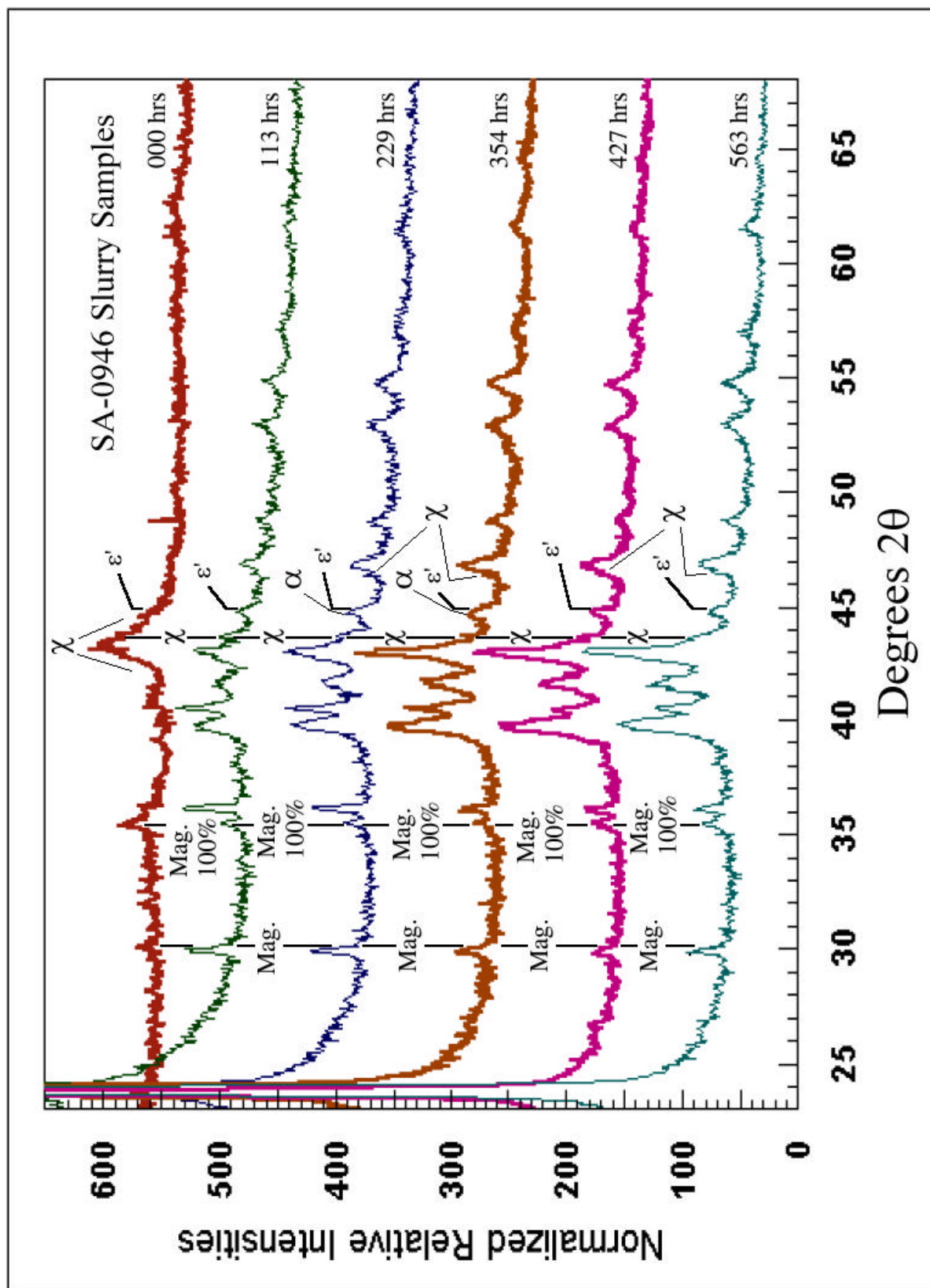
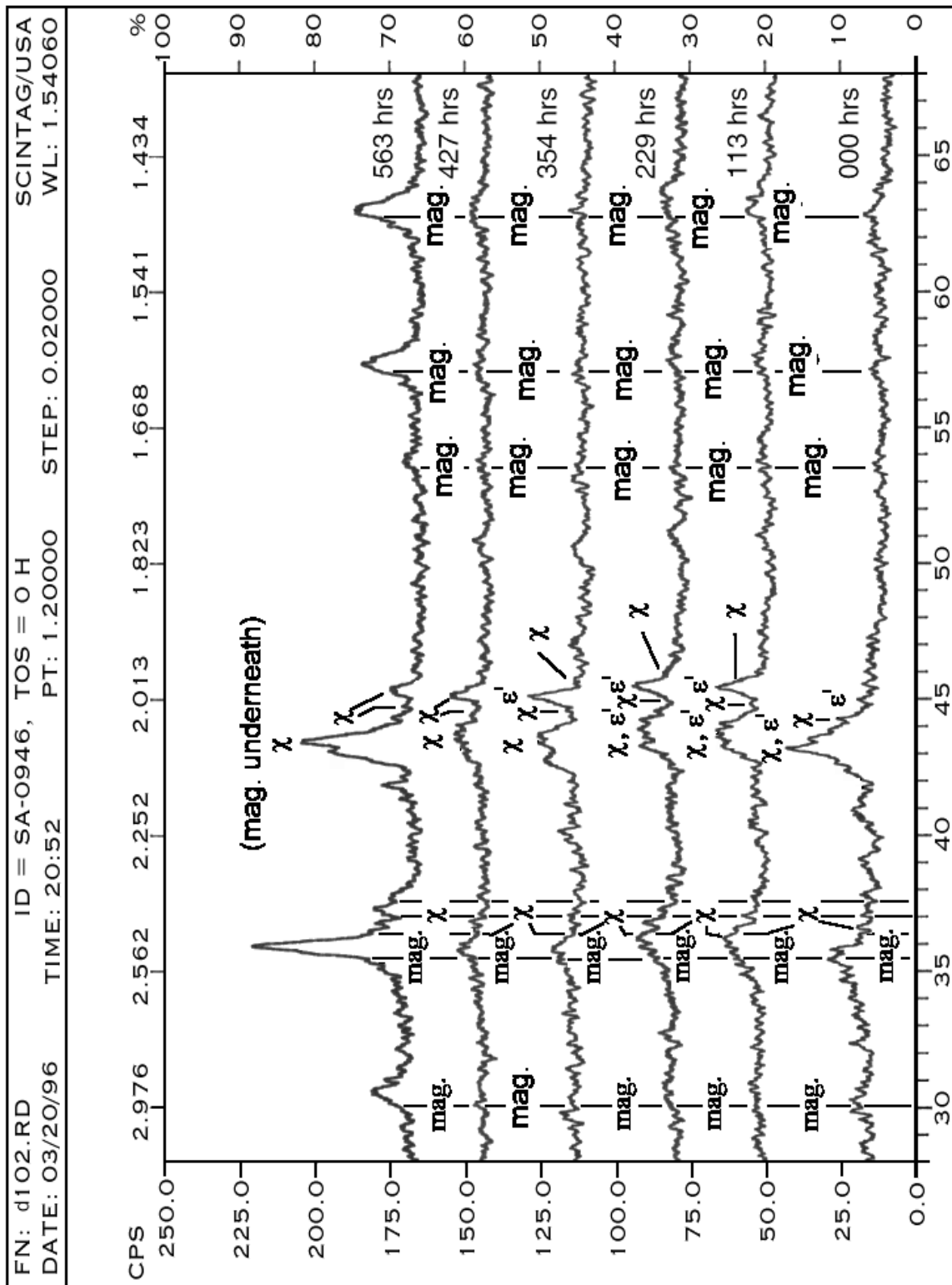


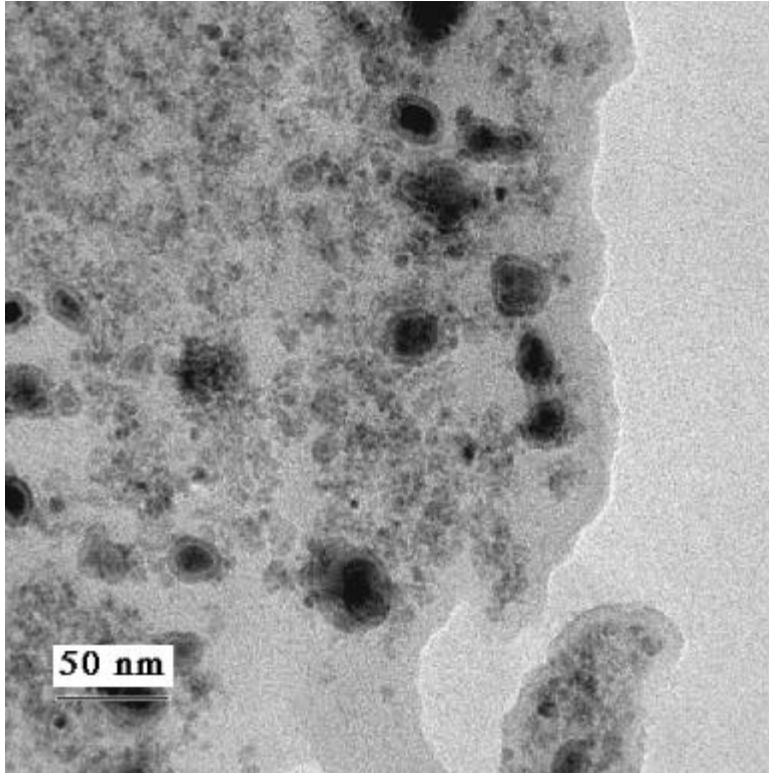
Figure 5b X-ray diffraction of samples from run SB-3425, extracted samples



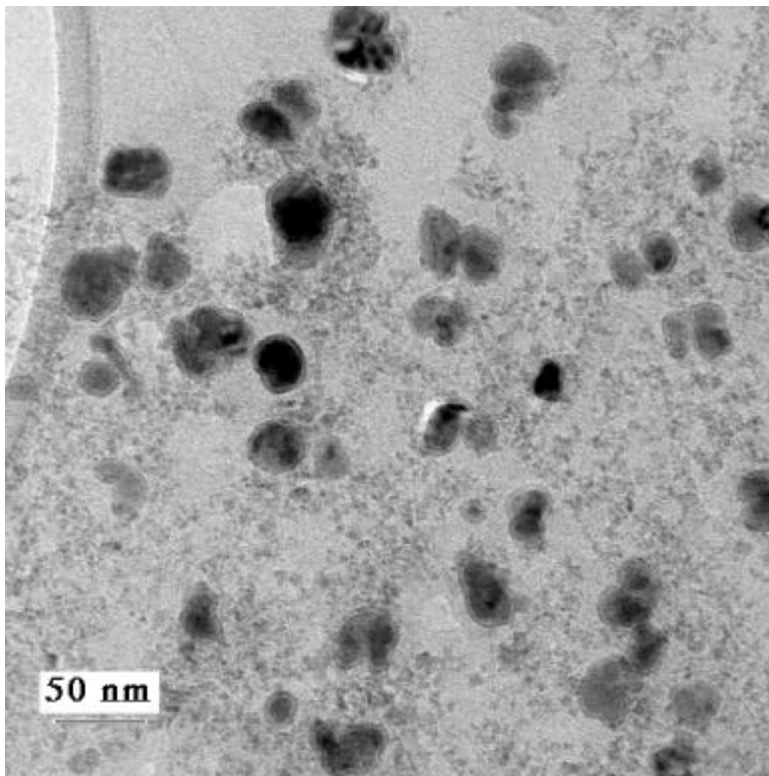
**Figure 5c** X-ray diffraction of samples from run SA-0946, slurry samples.



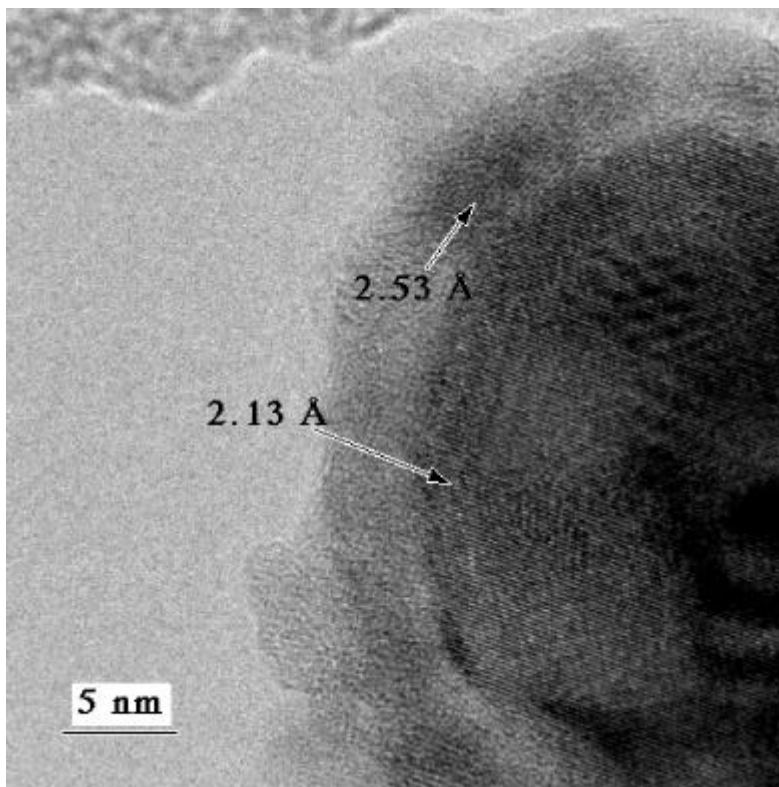
**Figure 5d** XRD of samples from run SA-0946, extracted.



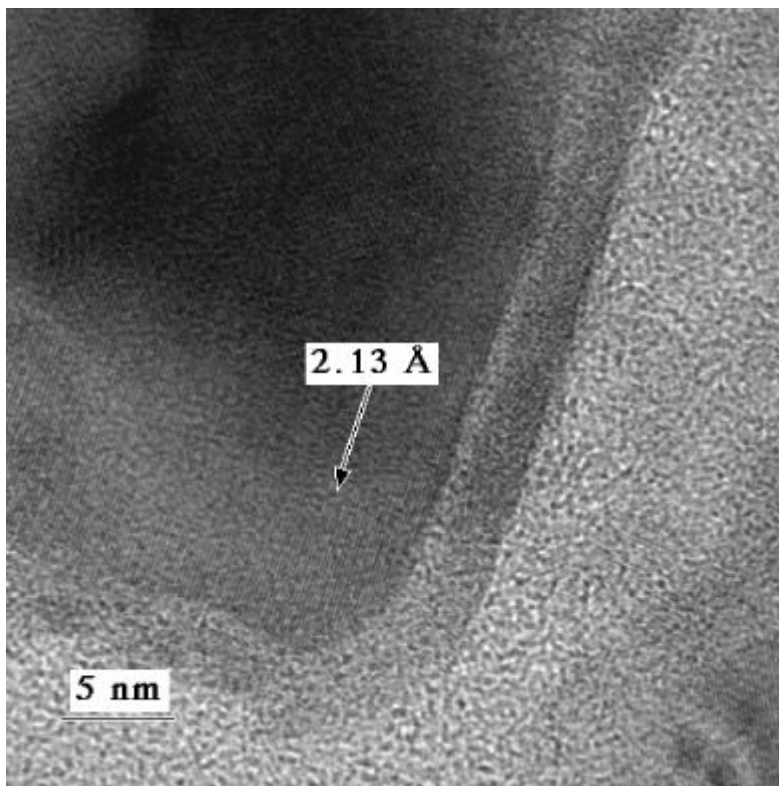
**Figure 6a** Low magnification view of SB-3425, TOS = 384 hrs, extracted powder.



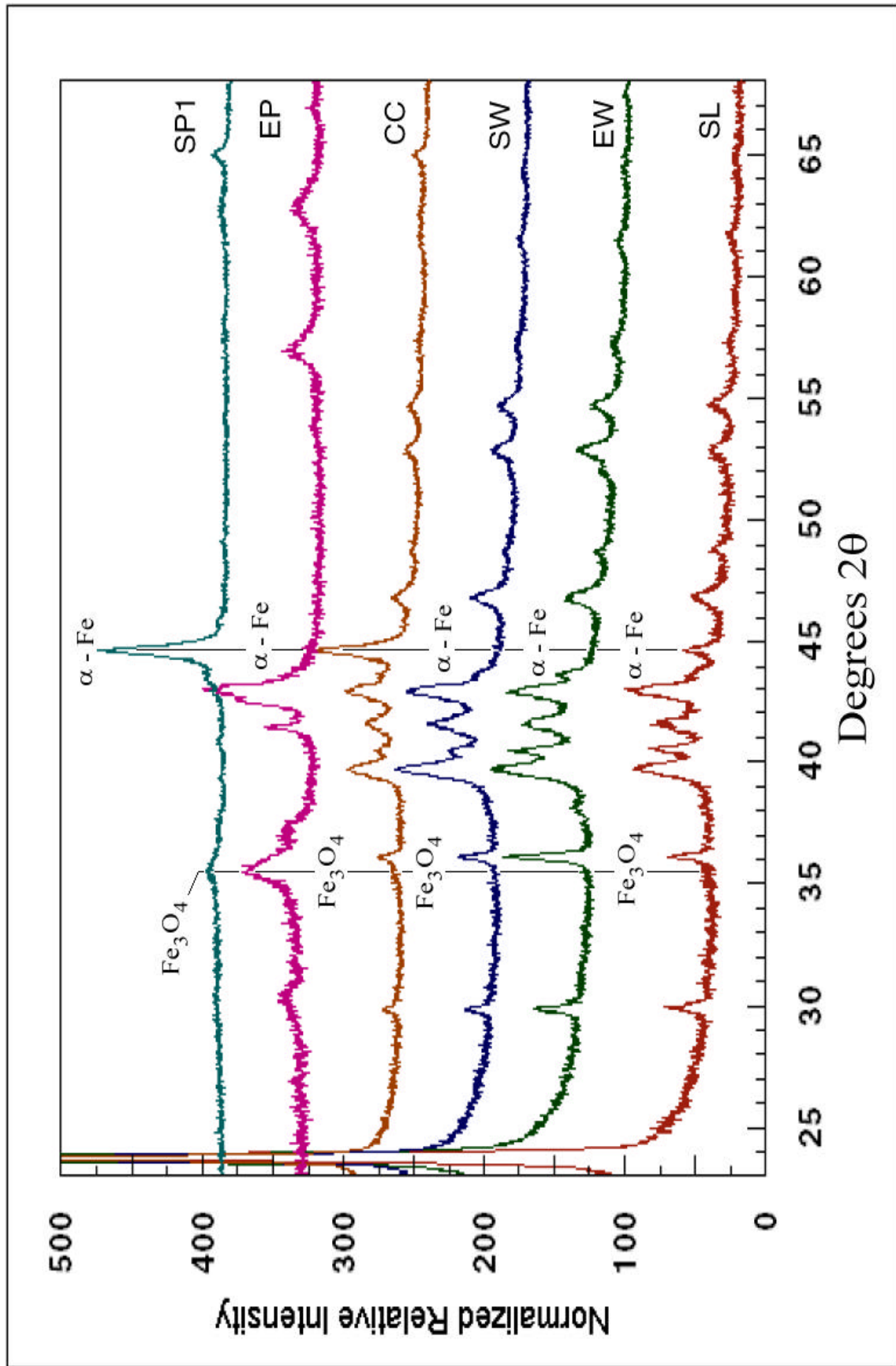
**Figure 6b** Low magnification view of SB-3425, TOS = 330 hrs, slurry.



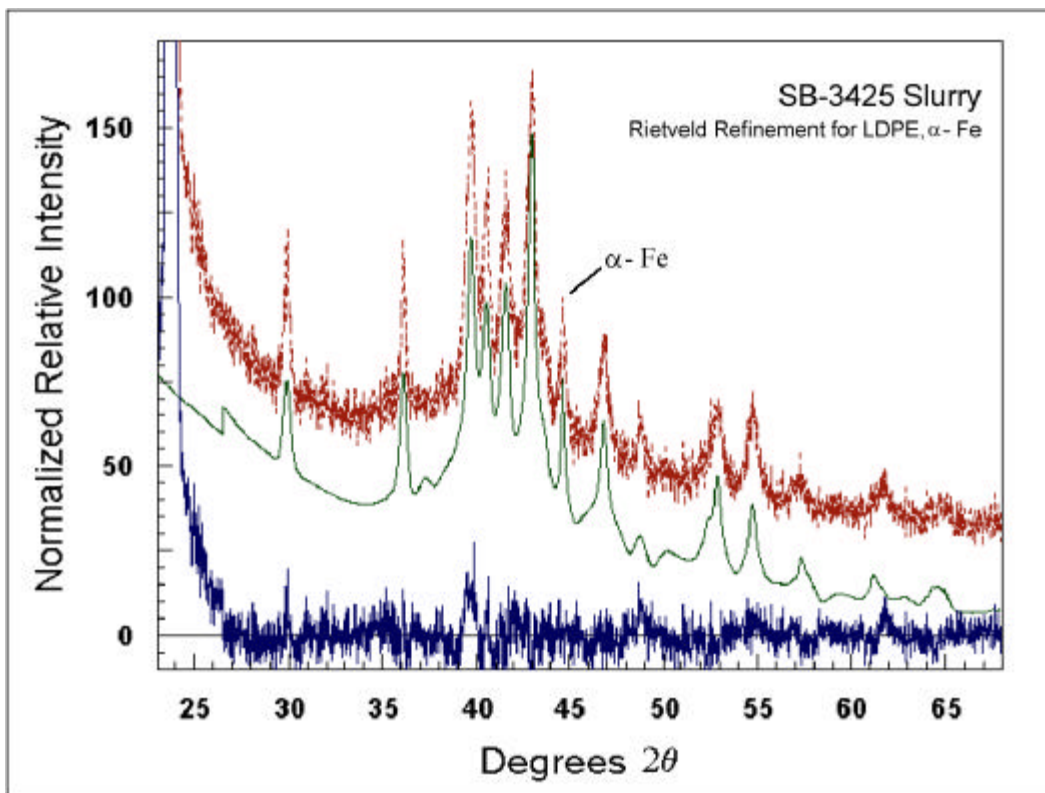
**Figure 6c** High magnification view of SB-3425, TOS = 384 hrs, extracted powder, no microtomy.



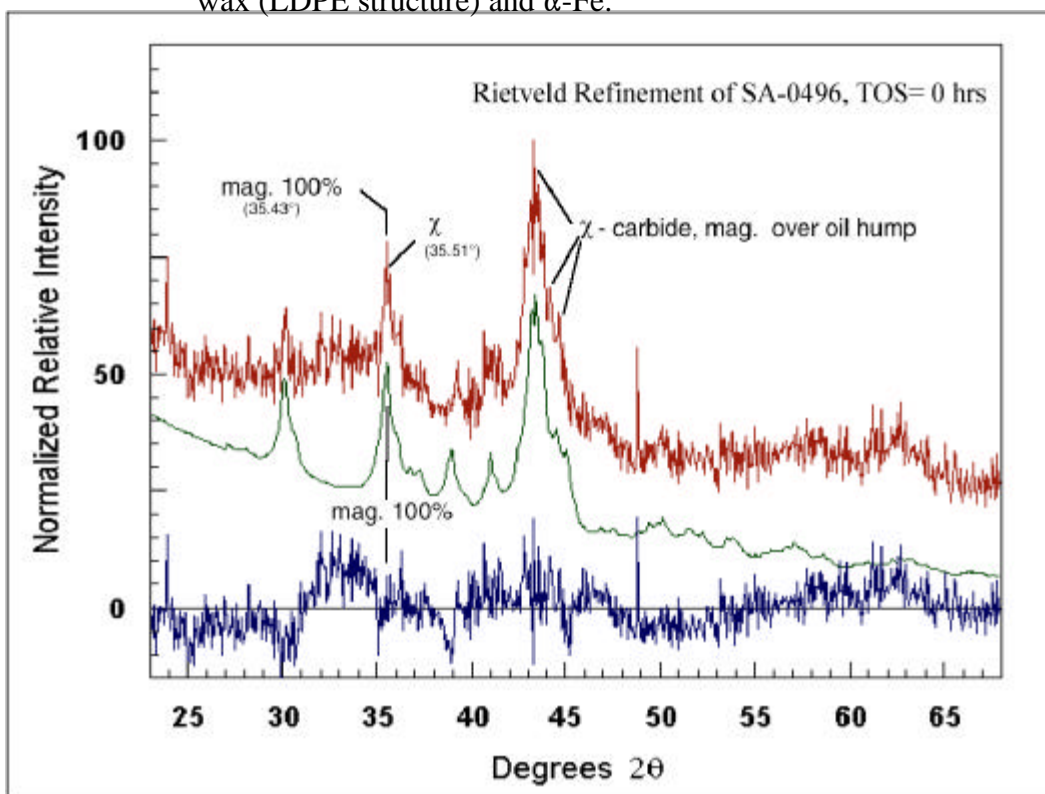
**Figure 6d** High magnification view of SB-3425, TOS = 330 hrs, slurry.



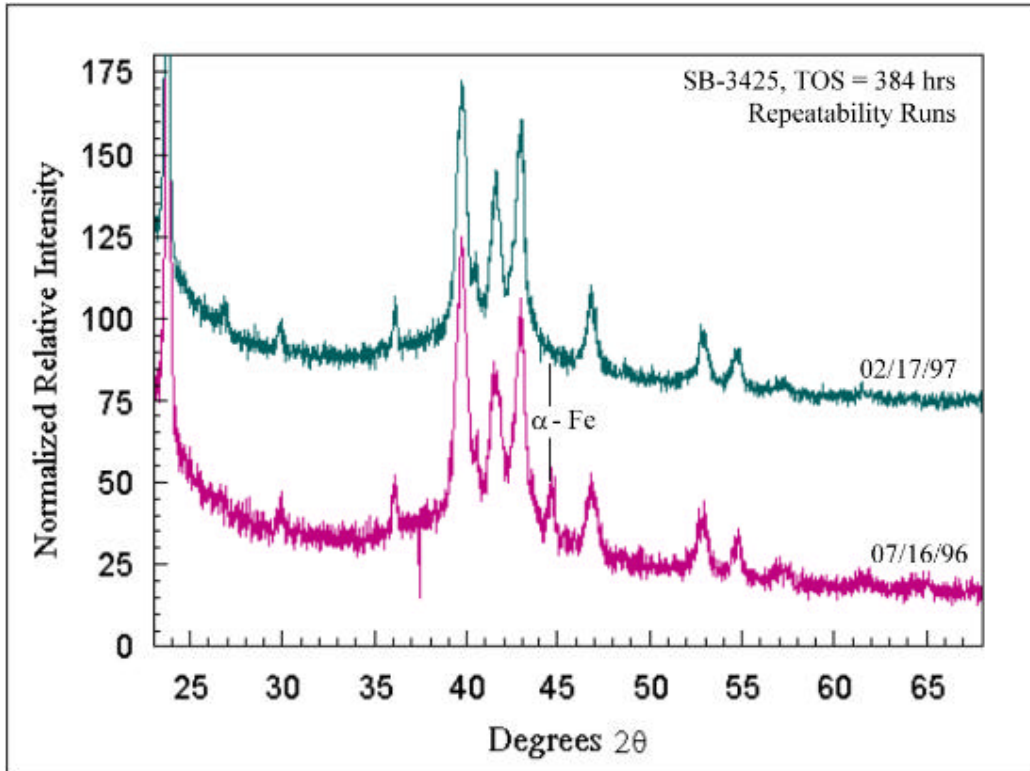
**Figure 7** XRD patterns of samples from SB-3425, TOS = 233 hrs. Original slurry (SL), soxhlet-extracted wax (EW), inert-stripped wax (SW), catalyst concentrated by sedimentation (CC), soxhlet-extracted powder (EP), and inert-stripped powder (SP).



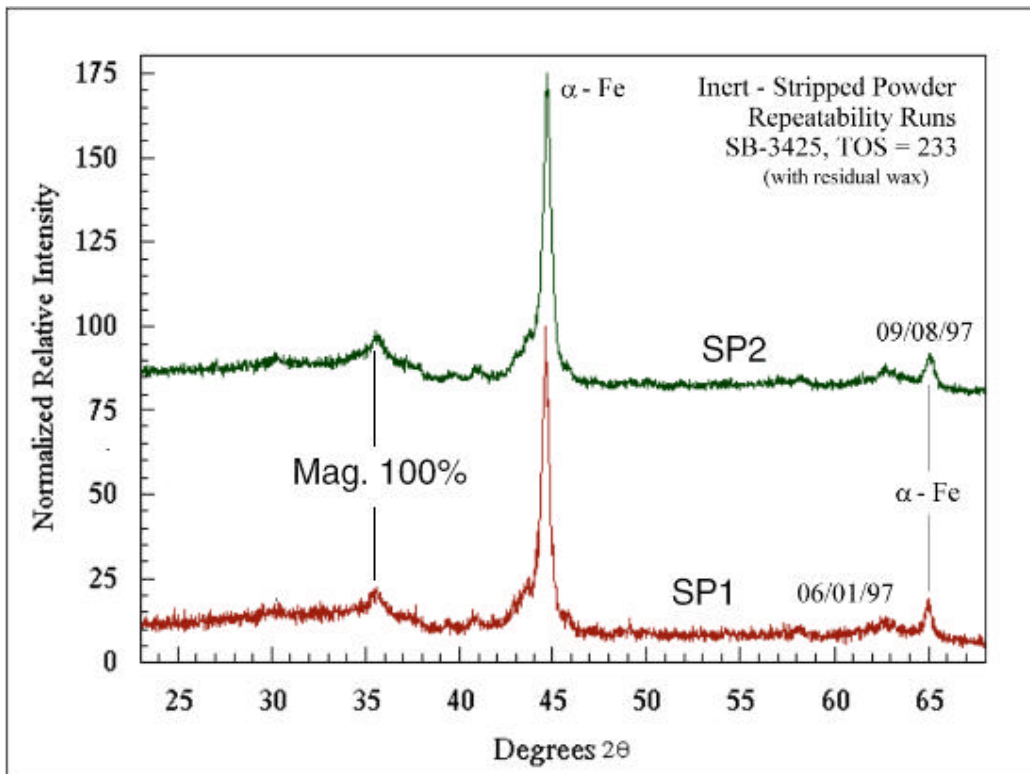
**Figure 8a** Incomplete Rietveld refinement of SB-3425, TOS = 233 hrs, for wax (LDPE structure) and  $\alpha$ -Fe.



**Figure 8b** Rietveld refinement of SA-0946, TOS = 000 hrs, catalyst in oil, for magnetite,  $\chi$ -carbide, and  $\epsilon'$ -carbide.

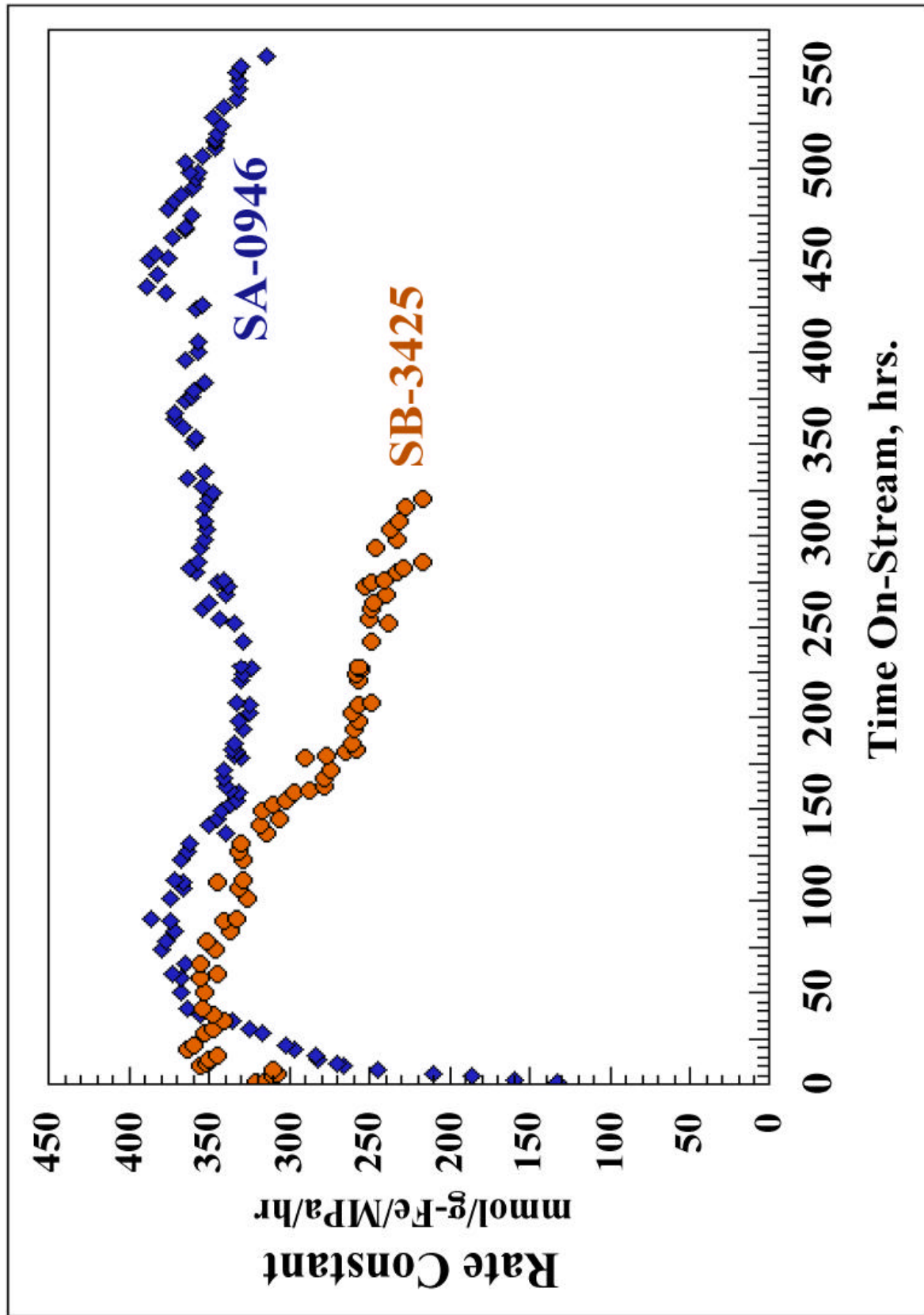


**Figure 9a** XRD plot of SB-3425, TOS = 384 hrs, slurry, and repeat analysis after 7 months.



**Figure 9b** XRD plot of SB-3425, TOS = 233, stripped powder after 1 month, with repeat analysis after 3 months.





**Figure 10** Fischer-Tropsch reactivity curves for runs SB-3425, and SA-0946, plotted as a pseudo first order rate constant referred to 260°C, in mmol of CO converted per g Fe per MPa pressure per hour. (Ref. Table 3).