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渡 辺 修 二*

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畑 耕 三*

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小 坂 次 郎*

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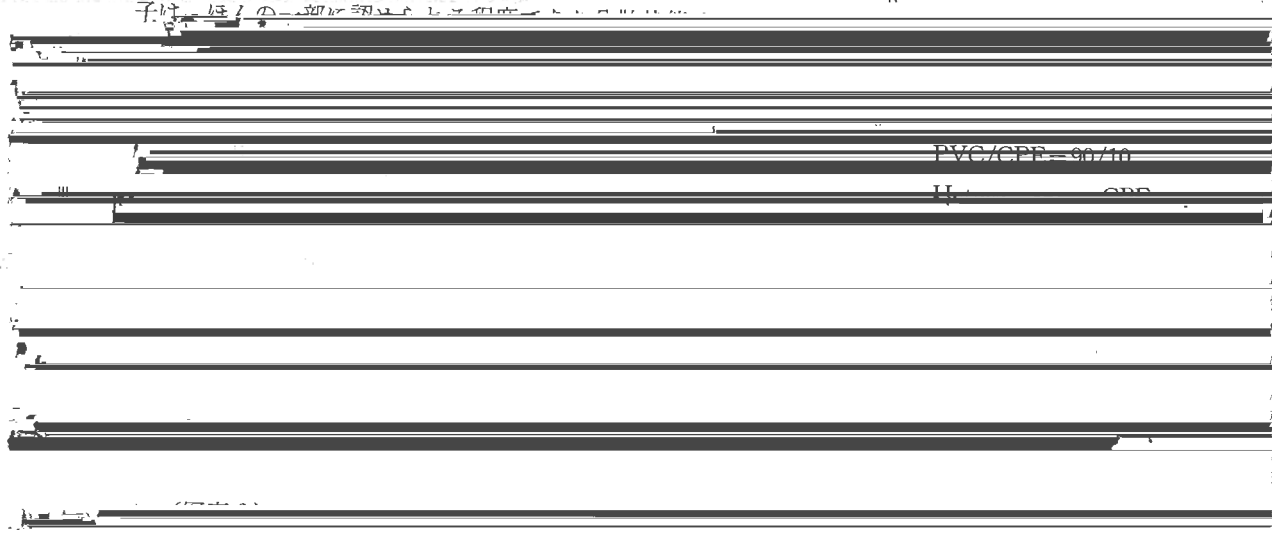
PVC/CP
H...



子付 12/10 30/17 50/17 1.7 10/17 1.7 10/17 1.7

PVC/CP = 90/10

H... CPD



100%



Mixing time : 10 min

Fig. 1 Effect of mixing time on transparency of

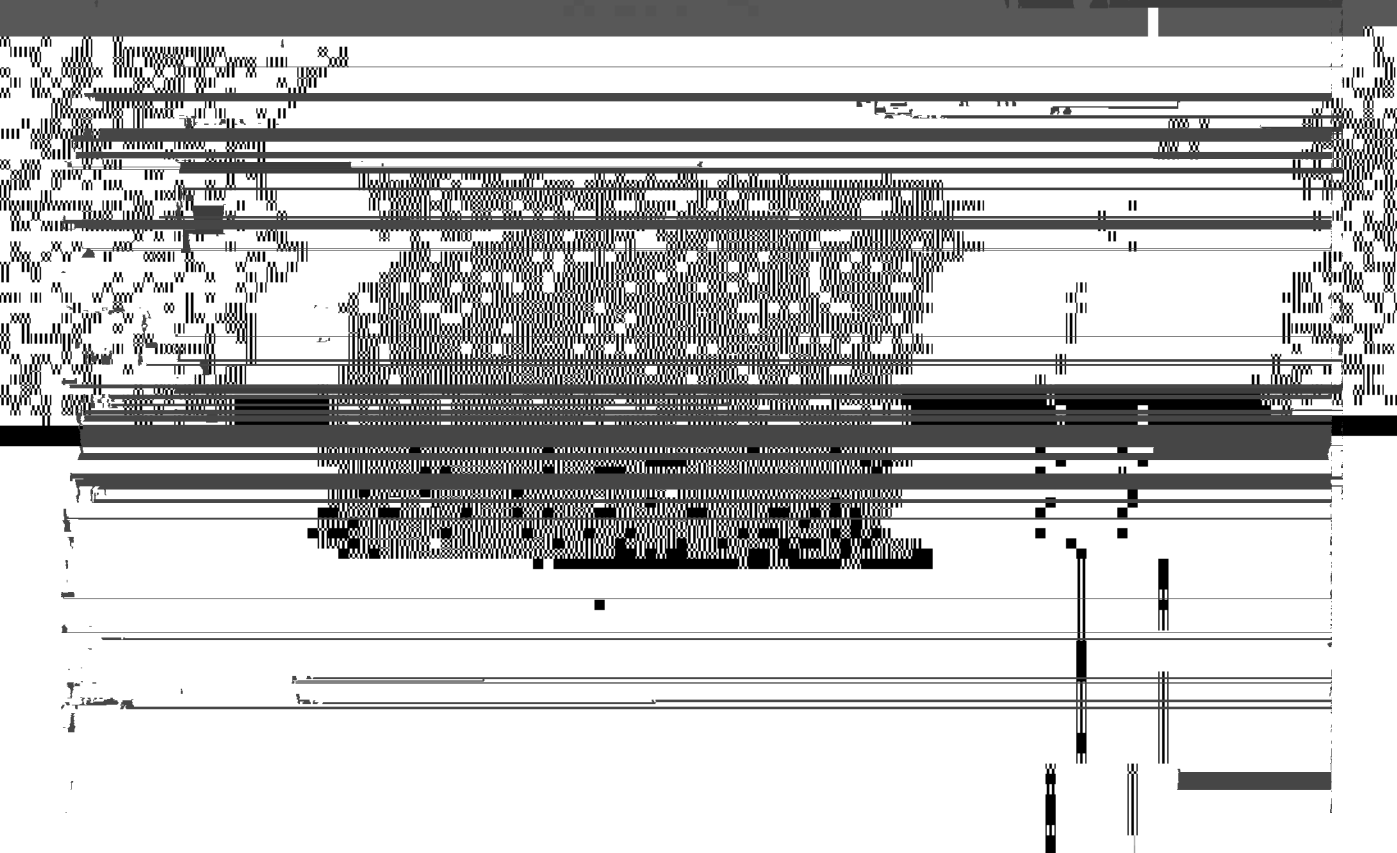
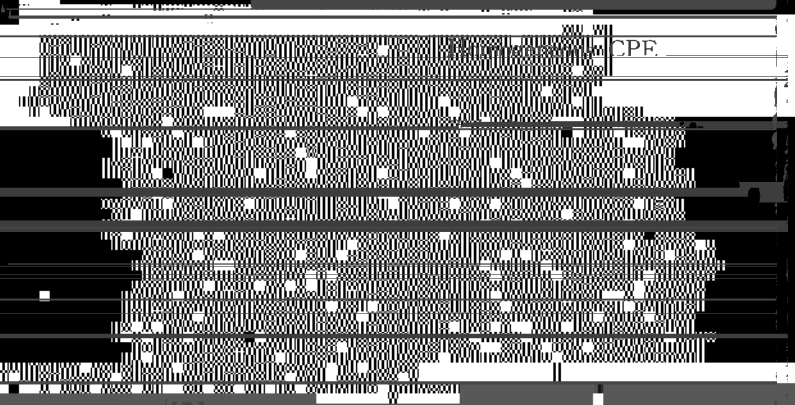
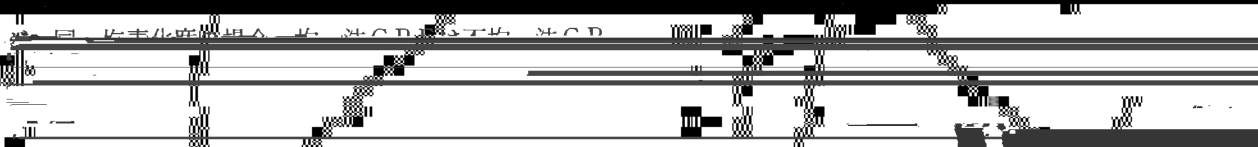


Figure 1 shows the typical morphology of the Cu_2O nanowires. The nanowires are single-crystalline and have a diameter of about 100 nm. The length of the nanowires is in the range of 1 to 2 μm . The nanowires are randomly oriented and have a smooth surface. The inset in Figure 1 shows the high-resolution transmission electron microscopy (HRTEM) image of the nanowires, which shows the lattice fringes with a spacing of about 0.35 nm, corresponding to the (111) plane of Cu_2O .

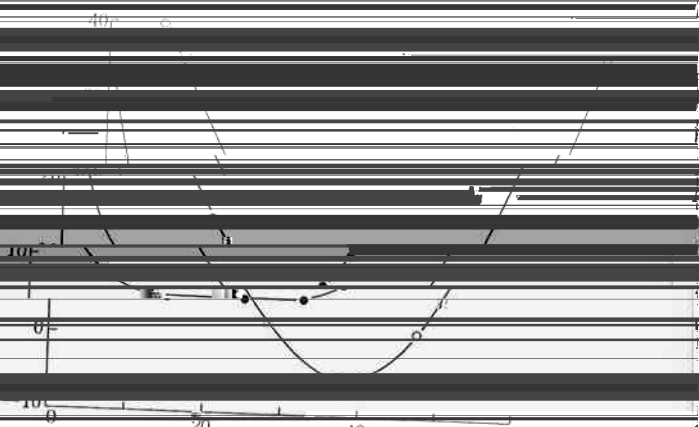
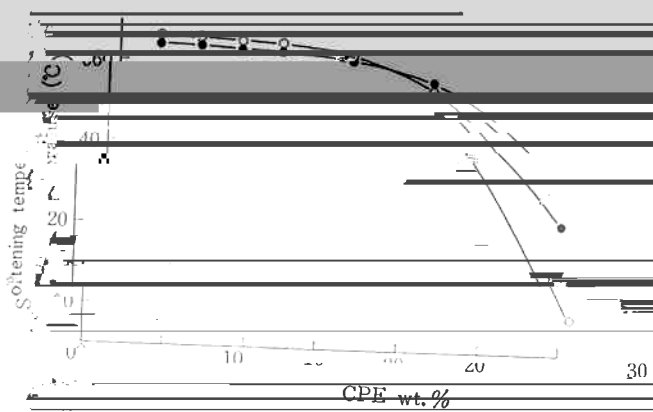
The XRD patterns of the Cu_2O nanowires are shown in Figure 2. The patterns show a single phase of Cu_2O with a cubic structure. The diffraction peaks are indexed to the (111), (200), (220), and (311) planes of Cu_2O . The intensity of the (111) peak is the highest, indicating a preferential growth along the [111] direction. The inset in Figure 2 shows the selected area electron diffraction (SAED) pattern of the nanowires, which shows a single spot at the (111) position, further confirming the single-crystalline nature of the nanowires.

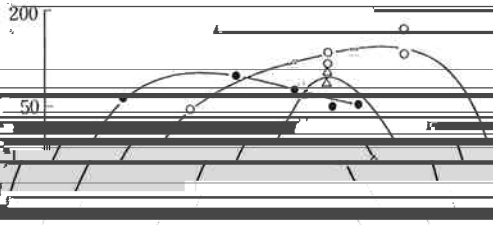


The UV-Vis absorption spectra of the Cu_2O nanowires are shown in Figure 3. The absorbance increases with increasing wavelength, and a sharp absorption edge is observed at about 280 nm. The inset in Figure 3 shows the calculated band structure of Cu_2O , which is a direct bandgap semiconductor with a bandgap of about 2.17 eV. The absorption edge of the nanowires is in good agreement with the bandgap energy of Cu_2O .



The photoluminescence (PL) spectra of the Cu_2O nanowires are shown in Figure 4. The PL spectrum shows a broad emission band centered at about 620 nm, which is characteristic of the recombination of photo-generated electron-hole pairs. The inset in Figure 4 shows the PL spectrum of the nanowires under an applied magnetic field, which shows a shift in the emission peak position, indicating the presence of a quantum dot effect.





Chlorine content (%)

Figure 16 shows the chlorine content of the polymerization products

文 献

10 (1966).

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3) J. R. Hyndman; *Polymer Eng. Sci.* 6 169 (1966).

4) 小川: "ポリマー" 47-48 = 22 (1966)

2 168(1968)

6) 木村, 未発表.