

Electronic Supplementary Information

Freon-CO₂-assisted purification of single-walled carbon nanotubes

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Table S1. Experimental details of the SWCNT and MWCNT samples

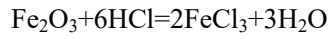
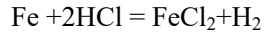
Sample	Air pre-oxidation	CO ₂	CO ₂ +Freon	0.01 mol L ⁻¹	6 mol L ⁻¹	Freon
				HCl	HCl	
RS						
AS	√				√	
CS	√	√			√	
CF	√		√	√		
CF-1	√		√		√	
CF-2	√	√			√	√
RS-M						
CF-M	√		√	√		
CF-M1	√		√		√	

For RS, its purity is 85.8%, the mass of the sample is 0.2 g. Represented by the element iron, the amounts of related substances are as follows:

$$(0.2 \text{ g} \times (1 - 85.8\%)) / 55.85 \text{ g mol}^{-1} = 0.00051 \text{ mol} \quad (55.85 \text{ g mol}^{-1} - \text{Fe})$$

$$(0.2 \text{ g} \times (1 - 85.8\%)) / 79.85 \text{ g mol}^{-1} = 0.00036 \text{ mol} \quad (79.85 \text{ g mol}^{-1} - \text{Fe}_2\text{O}_3)$$

The reaction equations of HCl with Fe and Fe₂O₃ are as follows:



To ensure the solid-liquid ratio of four thousandths of the case, the amount of HCl needs to reach 0.001-0.0022 mol, the corresponding concentration of HCl is 0.01-0.02 mol L⁻¹. Considering that some metal impurities will react with chlorine, the concentration of 0.01 mol L⁻¹ is enough.