

저온에서 촉매적 메탄열분해시 나노메타크기 pyrocarbon whisker의 성장

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In this study pyrocarbon whisker growth was succeeded that could be observed through a looking glass during the catalytic CVD of methane even at the low temperature of 950oC and at normal atmosphere. The growth rate of 0.05 cm/min was measured. When the growth was stopped at the initial stage(primary growth), about 10 min after the starting, its real diameter has ranges from submicron- to nanometer-size and several micrometers in length. as Turnbull and Rappeneau have reported as 1000Å in length and 10Å in diameter. Among the carbon materials, graphite whiskers are the strongest with strengths as high as 21 GPa because they are almost completely free of flaws. The electrical resistivity was around 10⁻⁵ ohm-cm, with a positive temperature coefficient. Therefore the preparation of pyrocarbon whiskers of highly purified artificial graphite is very interesting and may find useful applications in the nanoelectronic sector.