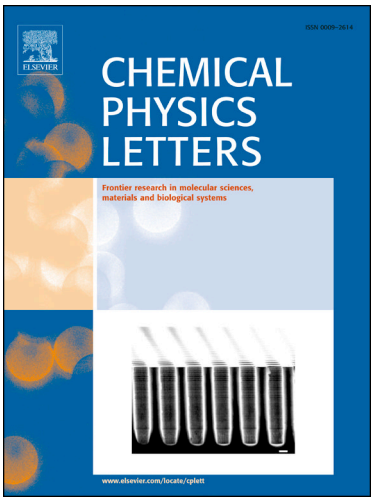

Frontiers article

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Synthesis of polyynes by intense femtosecond laser irradiation of SWCNTs suspended in methanol

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Abstract

Polyyne samples $C_{2n}H_2$ (n=4-6) were synthesized by irradiating single-wall carbon nanotubes in methanol with intense femtosecond laser pulses. For obtaining isolated polyynes (C_8H_2, $C_{10}H_2$, and $C_{12}H_2$), the original solution was separated by high performance liquid chromatography. The surface-enhanced Raman scattering spectra of isolated polyynes in Ag colloid have been investigated with naturally drying time, and clear peaks in the region of β band for the isolated C_8H_2 were observed at 1910 and 1958 cm^{-1} in the damp-dried Ag colloid samples for the first time.

Keywords: Polyyne; Femtosecond laser irradiation; SWCNTs; Surface-enhanced Raman scattering.