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

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## Abstract

Polyne 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  $\beta$  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:** Polyne; Femtosecond laser irradiation; SWCNTs; Surface-enhanced Raman scattering.

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