Title (1)	:	**Co-production of Biochar and Carbon Nanotube from Sewage Sludge in a Two-Stage Process Coupling Pyrolysis and Catalytic Chemical Vapor Deposition**
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Abstract	:	This study explores the potential of valorizing sewage sludge as a carbon source for the co-production of biochar and carbon nanomaterial via a two-stage thermal-catalytic process. In the first stage, sewage sludge underwent slow pyrolysis, resulting in a biochar yield of 66% (in weight) at 550 °C. The resulting pyrolysis vapor was then introduced into a second reactor, where catalytic chemical vapor deposition (CCVD) took place in the presence of a cobalt catalyst, leading to the production of carbon nanotubes (CNTs). It was found that CNTs with an inner diameter of ~ 3.2 nm and an outer diameter of 20–40 nm can be formed in the second stage reactor at temperatures between 650 °C and 950 °C with a maximum yield of 30% (in weight) under the employed experimental conditions. The obtained CNTs displayed a multiwall structure, exhibited a lack of crystallinity, and demonstrated a high level of disorder. The research findings also indicate that temperature exerts a significant influence on both the yield and properties of the CNTs synthesized.