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An *in situ* liquid cell TEM study on nanomaterial depositions and nano characterizations

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In situ liquid cell TEM technology has been used to study nano material deposition by means of liquid phase electron beam induced deposition (LP-EBID). The electron beam energy varies from 100 keV to 200 keV. Firstly, using a H₂AuCl₄ solution as the precursor and under a broad electron beam, scattered gold nano particles of 14-72 nm have been deposited. Then using SiCl₄ and Si₂Cl₆ in CH₂Cl₂ solutions as the precursors and under well focused electron beam irradiations, localized Si and Si_xC_x nano dots and nano wires have been developed. The size and shape of the Si and Si_xC_x nano structures can be well controlled by adjusting the deposition parameters, and the nanostructures are found to attach well to the Si₃N₄ window substrates of the liquid cell, showing good promise for future nanoelectronic device developments. Besides these inorganic nanostructures, the *in situ* TEM technology has been further successfully used to perform nano characterizations on organic composites and biological cells.

Biography

Xin Chen has completed his PhD from University of Houston and Postdoctoral studies from University of Houston. He served as Visiting Research Assistant Professor in University of Illinois at Urbana-Champaign, and he is now Shanghai Thousand Plan Professor in East China University of Science and Technology. He has published more than 30 papers in reputed journals, made invited talks in several international conferences, and edited a book. He is a referee of over 15 reputed journals, and he has served as committee member in several reputed research societies and international conferences.

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