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The Study on Characteristics of N-Doped Ethylcyclohexane Plasma-Polymer Thin Films

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In this studying, we investigated the basic properties of N-doped plasma polymer. The N-doped ethylcyclohexane plasma polymer thin films were deposited by radio frequency (13.56 MHz) plasma-enhanced chemical vapor deposition method. Ethylcyclohexene was used as organic precursor (carbon source) with hydrogen gas as the precursor bubbler gas. Additionally, ammonia gas [NH₃] was used as nitrogen dopant. The as-grown polymerized thin films were analyzed using ellipsometry, Fourier-transform infrared [FT-IR] spectroscopy, Raman spectroscopy, FE-SEM, and water contact angle measurement. The ellipsometry results showed the refractive index change of the N-doped ethylcyclohexene plasma polymer film. The FT-IR spectra showed that the N-doped ethylcyclohexene plasma polymer films were completely fragmented and polymerized from ethylcyclohexane.

Keywords: PECVD, Plasma polymer, N-doped ethylcyclohexene plasma polymer, Optical and chemical properties