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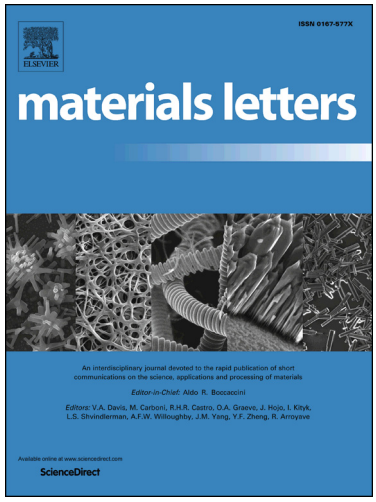

Graphitic carbon nitride nanoplate for elemental mercury capture

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Graphitic carbon nitride nanoplate for elemental mercury capture

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Abstract: Graphitic carbon nitride (g-C_3N_4) as a nanocarbon material has attracted accelerated concern because of its layered structure, facile synthesis route and lower capital cost. Here, three kinds of g-C_3N_4 are fabricated via simply thermal polycondensation of dicyandiamide, melamine, and urea at high temperature, and they are applied for elemental mercury (Hg^0) capture in a fixed-bed reactor. We found that the g-C_3N_4 nanoplate attained by urea pyrolysis exhibited prominent Hg^0 capture ability with Hg^0 removal efficiency of ~84% which is much higher than that of the g-C_3N_4 derived from dicyandiamide and melamine pyrolysis, probably attributed to its bigger BET surface area and pore volume.

Keywords: carbon materials; porous materials; graphitic carbon nitride; mercury removal