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Graphene and Graphene Derivatives for Pharmaceutical Residual Removal from Drinking Water[1] MING YU, HAIFENG ZHANG, University of Louisville — Strategy to keeping pharmaceuticals out of the nation's water supplies is the most essential and long-term procedure, while improving effective filtering systems at water treatment plants or at resident home is more practical and efficient. Current techniques including oxidation/ozonation, activated carbons, and filtration using membranes are relatively efficient when the concentration of pharmaceutical residues in the aquatic ecosystem is high, while when the concentration is relatively low, no one effective technique can remove so many different pharmaceuticals. To overcome such significant limitation, we are seeking to develop graphene based materials for pharmaceutical residual removal from drinking water and to initiate the study on dealing with this issue through fundamental understanding. Our results have shown that the graphene/graphene derivate could possess high adsorption rate to pharmaceutical residues (e.g., estradiol), promising their potential applications for pharmaceutical contamination removal from drinking water. Detailed information about the activities of the graphene with a variety of biomolecules, the type of adsorptions, and the effects of the attached hydroxyl, epoxyl, and carboxyl functional groups will be presented in the Meeting.

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