**TEEP Online internship**

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| Grade requirements | Master or Doctoral Student  | Professional subjects requirements | Organic or Inorganic chemistry major |
| Research theme I  | Synthesis of novel heteroatom-doped graphene molecules for electronic devices |
| Brief description of research direction: Heteroatom-doped graphenes are promising carbon-based materials for high-performance electronic devices due to their tunable electronic properties. The various methods for synthesizing the heteroatom-doped graphenes have been reported, such as chemical vapor deposition (CVD), ball milling, chemical modified, plasma and thermal annealing of graphene oxides. However, these approaches cannot produce a uniform doping structure, so it is hard to predict the electric and physical properties. We will develop the “bottom-up” chemical synthesis to produce the heteroatom-doped nanographenes with uniform width and precise edges. |
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| Research theme II | Synthesis of metal-organic cages and study of their host-guest chemistry |
| Brief description of research direction: Metal-organic cages are three-dimensional supramolecular coordination cages formed by coordination-driven self-assembly of organic linkers and metal ions/clusters. Generally, metal-organic cages contain a cavity that acts as a host to capture small-molecule guests in a definite manner. These host-guest interactions are led to several new applications in chemistry and biology. Because of their interesting structures and tunable inner cavities and distinct chemical/physical properties, we will design metal-organic cages for the absorption and separation of small molecules. |