

MAKING NEW FORMS OF NANOCARBONS

Kenichiro Itami^{a,b,c}

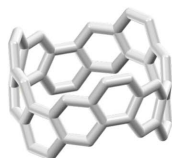
^aInstitute of Transformative Bio-Molecules (ITbM), Nagoya University, Nagoya 464-8602, Japan

^bDepartment of Chemistry, Nagoya University, Nagoya 464-8602, Japan

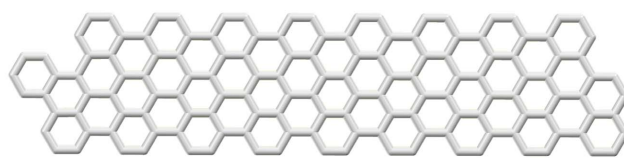
^cJST-ERATO Itami Molecular Nanocarbon Project, Nagoya 464-8602, Japan

Our group is trying to create a range of structurally uniform nanocarbons of fundamental and practical importance by bottom-up chemical synthesis (*Nature Rev. Mater.* 2016). Representative achievements include: (1) the development of single-step aromatic π -extension (APEX) methods for the rapid and programmable synthesis of nanocarbon molecules (*Science* 2018, *Nature Commun.* 2015, *Nature Chem.* 2015); (2) the synthesis of carbon nanorings, nanobelts and pure nanotubes (*ACIE* 2009, *Science* 2017, *Nature Chem.* 2013, *Nature Commun.* 2018); (3) the first precision synthesis of graphene nanoribbons controlling width, edge structure, and even length (*Nature*, *in press*); and (4) the synthesis of topologically unique nanocarbons such as warped nanographenes, carbon nanocages, all-benzene catenanes, and trefoil knots (*Nature Chem.* 2013, *etc.*).

In this talk, most recent beautiful molecular nanocarbons as well as our recently initiated nanocarbon biology project will be presented.



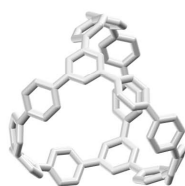
Carbon nanobelts



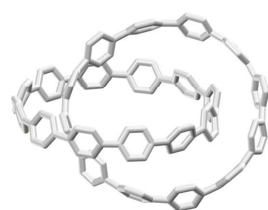
Graphene nanoribbons and nanographenes



Warped nanographenes



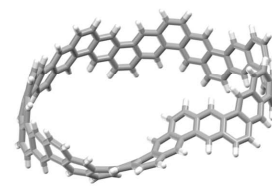
Carbon nanocages



All-benzene catenane



All-benzene trefoil knot



Mobius nanobelts