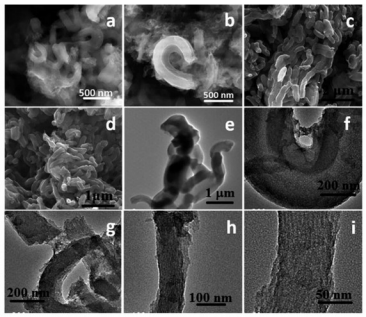
Synthesis of Heteroatom doped carbon nanomaterials:

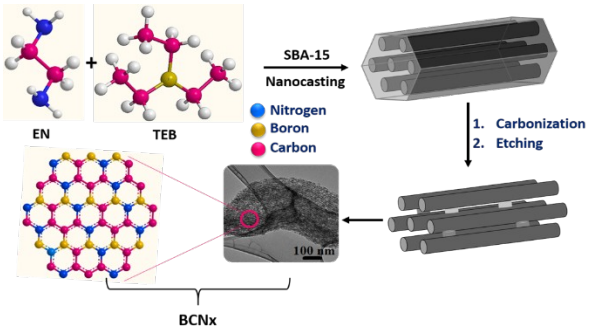
Since the discovery of mesoporous carbons, research has been extensively focused on the preparation, characterization and potential application of these materials in future developments. Mesoporous carbon materials have a very large speci∃c surface area and pore volume and a tuneable pore size. Nevertheless, owing to their hydrophobic nature and low number of active sites, their use is limited in catalysis and other fields. We have prepared a facile, promising single-step synthesis methodology for a boron- and nitrogen-co-doped hierarchical porous carbon material with a large surface area and tuneable porosity. Moreover, the reported material was found to be very attractive for the activation of C–H bonds and has been exploited as a metal-free catalyst for the selective oxidative dehydrogenation of propane to propylene.



Multifunctional materials have a unique potential impact on future scientific inventions by improving efficiency and versatility while minimizing cost. Mesoporous nitrogen-rich carbon materials and metal-supported mesoporous nitrogen-rich carbon materials are getting considerable attention owing to their unique structural and surface properties. Mesoporous nitrogen-rich carbon materials offer a wide range of applications in the photocatalysis, oxygen reduction reaction, organic transformations, and semiconductors. The Lewis basicity of nitrogen-doped carbon materials is achieved by pyridine-type N atoms in the CNx framework. However, controlling the N content in the CNx matrix with the use of amines and imines offers tunable Lewis basicity. Thus, the controlled synthesis of mesoporous nitrogen-rich carbon materials certainly incorporates Lewis basicity for its catalytic application. We prepared WOx nanocluster-embedded mesoporous nitrogen-rich carbon materials were prepared through a novel approach. The newly synthesized materials were found to be excellent bifunctional carbon-based catalyst systems for one-pot cascade reactions.
Multifunctional materials have a unique potential impact on
future scien tific inventions by improving efficiency and versatil-
ity while minimizing cost.
[1]
Ample examples can be found in
nature; therefore, researchers have now engaged themselves
in the design of materials that can perform dramatic “tailor-
able” functions in laboratories. In recent years, a wide variety
of multifu nctional material systems have been proposed.

[2]
A
simplified synthetic process with the least amount of waste
and a lower operational cost can be achieved with a logically
designed cascade approach

Hence, in this report an innovative way to prepare well-
structured new WO
x
nanocluster-embedded mesoporous nitro-
gen-rich carbon (MNC
x
) materials with different tungsten load-
ings
Hence, in this report an innovative way to prepare well-
structured new WO
x
nanocluster-embedded mesoporous nitro-
gen-rich carbon (MNC
x
) materials with different tungsten load-
ings
Hence, in this report an innovative way to prepare well-
structured new WO
x
nanocluster-embedded mesoporous nitro-
gen-rich carbon (MNC
x
) materials with different tungsten load-
ings



References:

1. Reena Goyal, Bipul Sarkar, Siddharth Sameer, Nikita Singhal, Arijit Bag and Ankur Bordoloi, *Chemistry A European Journal, 23 (2017) 16555.*
2. Reena Goyal, Bipul Sarkar, Siddharth Sameer, Nikita Singhal, Arijit Bag C. Pendemand Ankur Bordoloi, J. Mat. Chem A 4 (2017) 18559.

3. Reena Goyal, Deepa Dumbre, L. N. Sivakumar Konathala, Monica Pandey , Ankur Bordoloi; *Catal. Sci. Technol.,5 (2015) 3632–3638.*
4. Reena Goyal,Bipul Sarkar,Nishita Lucus ,Ankur Bordoloi; *Chem Cat Chem 6(2014)3091-3095.*