

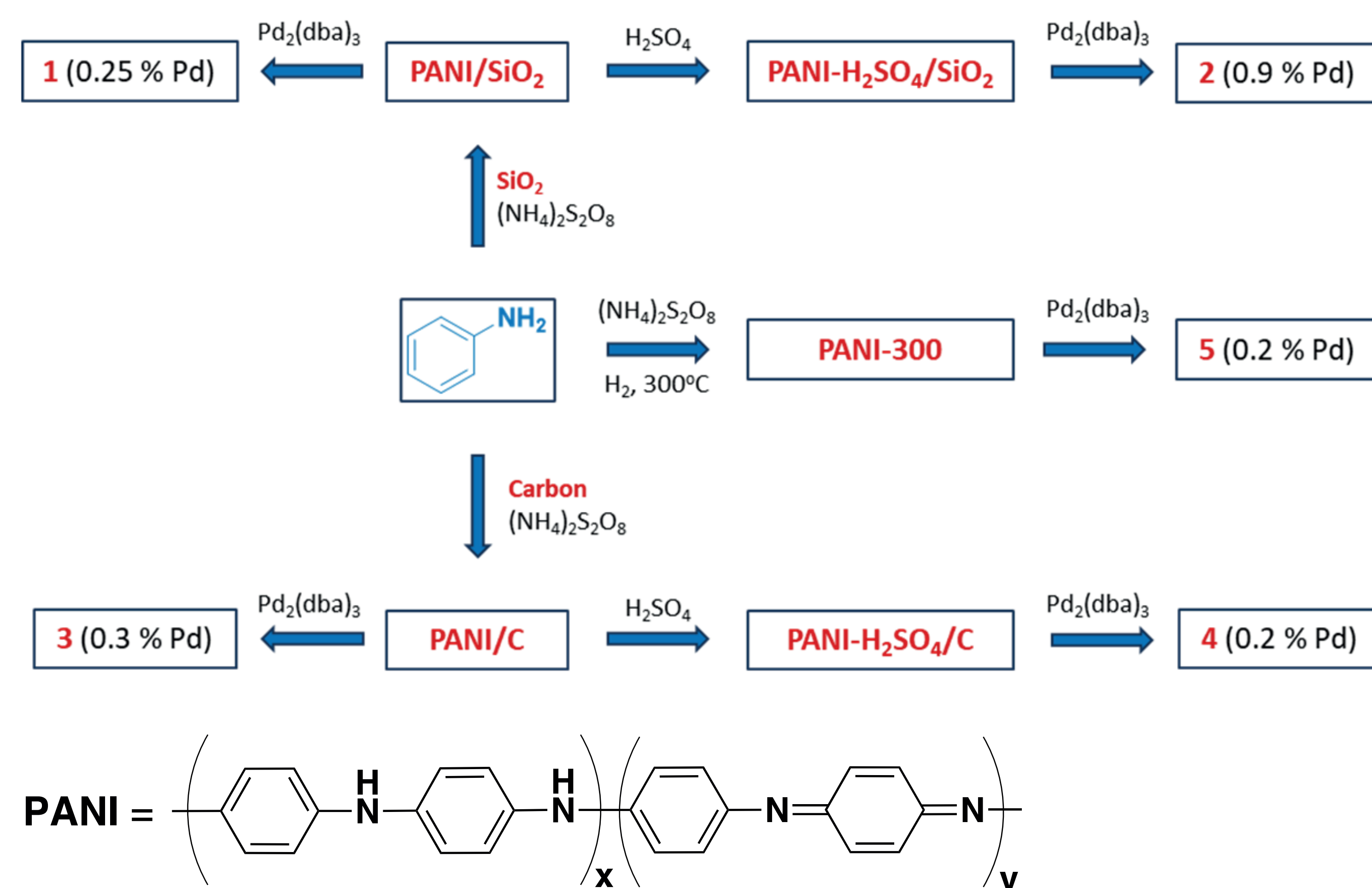
# Catalytic performance of the Pd-containing hydrogenation catalysts prepared by decomposition of the Pd(0) precursor on various supports



A. Poturai, O. Kompaniets, O. Pariiska, O. Yurchenko, S. Kolotilov, D. Volochnyuk, S. Ryabukhin

## General Idea

The decomposition of Pd<sub>2</sub>(dba)<sub>3</sub> complexes is a promising strategy for preparation of active heterogeneous catalysts, but the properties of the carrier are crucial for obtaining a high-performance catalyst



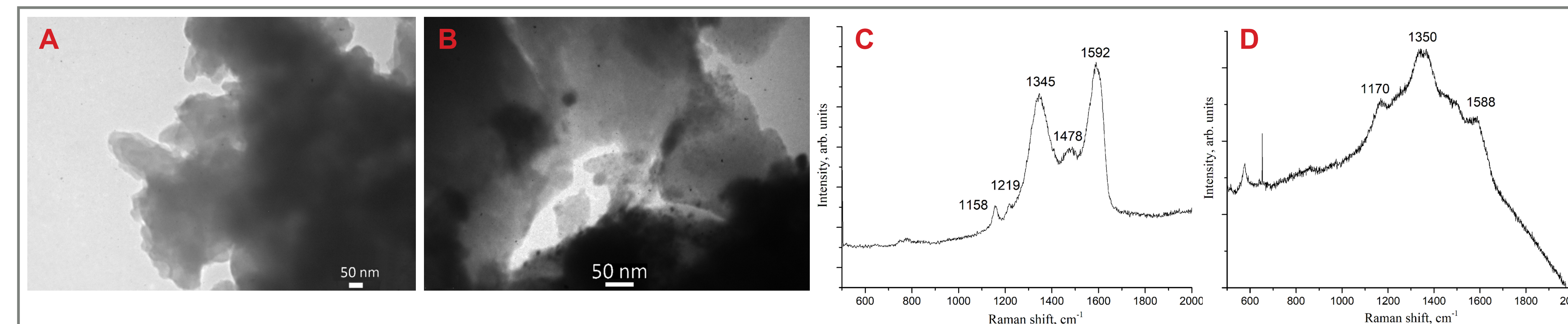
## Key points

- The catalytic performance of such systems strongly varied depending on the nature of the carrier, even the grade of the activated carbon.
- The only suitable commercially available grade of carbon with high activity is Norit GSX.
- Composite **2**, which showed the highest catalytic activity, is shelf stable in air. It saves at least 20% of activity **after 5 cycles** of loading in autoclave and separation from hydrogenation products.
- Low percentage of Pd in **1** and **3-5** leads to the fact that they can be effectively used only on highly active unsaturated compounds. In addition, **5** is unstable in air when stored for more than a month.

## Contact

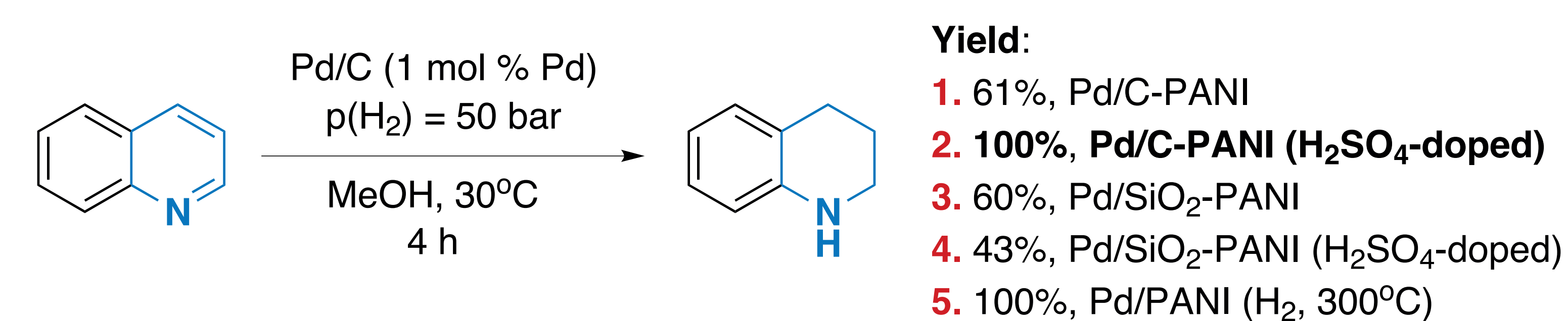
Sergey V. Ryabukhin, Prof. Dr. Sci.; s.v.ryabukhin@gmail.com,  
 Dmitriy M. Volochnyuk, Prof. Dr. Sci. d.volochnyuk@gmail.com.  
 Enamine Ltd, www.enamine.net  
 78 Winston Churchill St, 02094, Kyiv, Ukraine

## Catalyst Characterization



- A. TEM image of composite **5**  
 B. TEM image of composite **2**  
 C. Raman spectrum of PANI  
 D. Raman spectrum of PANI-H<sub>2</sub>SO<sub>4</sub>
- Upon treatment with sulfuric acid, the band at 1350 cm<sup>-1</sup> has the highest intensity. It is probably associated with formation of phenazine rings.
  - Heating to 300 °C did not cause carbonization of the polymer, but cross-linking of the 1D polymeric chains cannot be excluded.

## Performance in catalytic hydrogenation



Hydrogenation examples with composite **2**. Product (s) and yields. Cond.: 50 Bar, 30oC, MeOH, 1M% Pd, 4 h:

