

**Panel: advanced synthetic methods**  
**Topics for the mid-term evaluation**

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**Part 1: Pseudopolymorphism in coordination polymers**

1. What structural changes may occur in coordination polymers upon loss of crystallisation solvent?
2. Discuss the differences in experimental settings and applications between the volumetric and gravimetric methods used in volatile liquids vapour sorption.

**Part 2: Magnetic materials**

1. Discuss the basic methods of synthesizing in anaerobic/anhydrous conditions on any example of a compound sensitive to atmospheric air.
2. Discuss the principles of laboratory work with the use of a glove box prepared to work in an atmosphere of chemically inert gas.
3. Describe the principle of operation of the Schlenk line and the methods of preparing the glass apparatus for operation in anaerobic/anhydrous conditions.

**Part 3: Modern and non-standard methods of organic synthesis, examples of their application, comparison with classical heating of reaction mixtures.**

1. Describe - taking into account specific aspects - the possible advantages of carrying out the synthesis using grinding or microwave irradiation compared to the synthesis using traditional heating of the reactants in a suitable solvent.
2. Which of the 12 basic principles of Green Chemistry can be implemented (and how) during syntheses using non-standard methods of supplying energy to the reaction system? Answer using the example of two such non-standard energy delivery methods.
3. Using the information provided during the panel classes, describe two reactions that are more beneficial under organocatalytic conditions and under the influence of light of the appropriate wavelength than under traditional conditions. For each of these two selected responses, state these benefits.