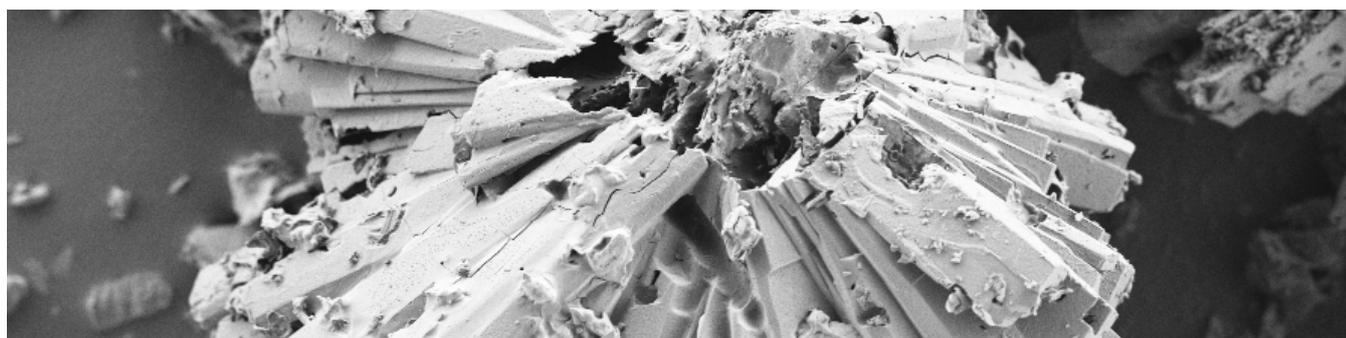




Federation of European Zeolite Associations

FEZA

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Past FEZA meetings:



8th FEZA conference

NANOPOROUS MATERIALS: From Fundamental Science to Advanced Applications,

was virtual, held on-line 5-9 July 2021. FEZA School on Zeolites was also virtual, held on 1-2 July.

Information about the conference and the school can be found [here](#).



7th FEZA conference

The ZEOLITES: Materials with Engineered Properties,

was held in Sofia, Bulgaria, July 3-7, 2017. Book of Abstracts was printed and distributed. Post-conference FEZA School on Zeolites was held on July 7-9, 2017 in the ancient town of Plovdiv.

Information about the conference and the school can be found [here](#).



6th FEZA conference

Porous Systems: From Novel Materials to Sustainable Solutions,

was held in Leipzig, Germany from 8th to 11th September 2014. Conference website can be accessed [here](#).

Pre-conference school "Hierarchically-ordered Materials: From Theory to Applications" was held on September 5-7.



5th FEZA conference

Innovations in Zeolites and Ordered Porous Solids,

was held in Valencia, Spain, from 3rd to 7th July 2011. Book of abstracts can be downloaded [here](#).

Post-conference 3rd FEZA School on Zeolites was held on 8th and 9th of July. Accompanying book "Zeolites and ordered porous solids: fundamentals and applications" was published and is available online:



Complete list of [FEZA](#)



[members.](#)

[FEZA 2011 Book of abstracts.](#)

Information about the conference and the school can be found at [Conference](#) and [school](#).

4th FEZA conference

"Zeolites and Related Materials: Trends, Targets and Challenges",

was organized by the French Zeolite Group and "Université Pierre et Marie Curie" Paris.

It was held in Paris, France, from 2nd to 6th September 2008.

2nd FEZA school was held at the "Université Pierre et Marie Curie" in Paris, on September 1st and 2nd 2008.

Conference website can still be accessed here:

<http://www.congres.upmc.fr/feza2008/>

Flyer: [FEZA2008](#)

Some information about school: [2nd FEZA school](#)

Book of abstracts can downloaded here: [FEZA 2008 Book of abstracts.](#)



3rd FEZA conference

"Molecular Sieves: from Basic research to industrial applications",

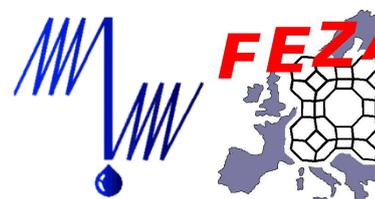
has been held in Prague, Czech Republic, from August 23rd to 26th, 2005.

The conference has been organized by The Czech Zeolite Group and J. Heyrovsky Institute of Physical Chemistry under the auspices of the FEZA.

Proceedings from the conference are collected in "Studies in surface science and catalysis, Vol. 158": [Part A](#) and [Part B](#)

Before the conference, 1st FEZA School on Zeolites was held in Prague on August 20.-21. 2005.

[Zeolites and Ordered Mesoporous Materials: Progress and Prospects](#) reflects the programme of the first School on Zeolites.



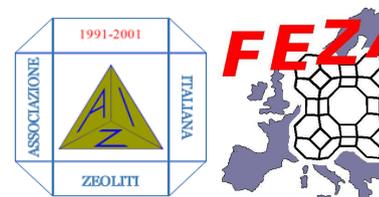
2nd FEZA conference

"Impact of Zeolites and other Porous Materials on the new Technologies at the Beginning of the New Millennium",

was held in Taormina, Italy, from September 1st to 5th, 2002.

The conference was organized by the Italian Zeolite Association under the auspices of the FEZA. Proceedings from the conference are collected in

["Studies in surface science and catalysis, Vol. 142"](#)



1st FEZA conference

"Porous materials in Environmentally Friendly Processes",

was organized in Eger, Hungary, from September 1st to 4th, 1999.

The proposal to organize an International Thematic Conference under the auspices of the FEZA was made by the leading members of the Hungarian Zeolite Association during the FEZA Committee Meeting, held in Budapest in 1998.

The proposal was accepted with enthusiasm by the members of the Committee and the idea about the FEZA conference was successfully realized after one year.

Proceedings from the conference are collected in ["Studies in surface science and catalysis, Vol. 125"](#)

Exhaustive list of conferences relevant to zeolite science can be found

B. Kalebić¹, J. Pavlović², J. Dikić², A. Rečnik³, S. Gyergyek³, N. Rajić¹

¹Faculty of Technology and Metallurgy, University of Belgrade, Serbia

²Innovation Centre of Faculty of Technology and Metallurgy, University of Belgrade, Serbia

³Jožef Stefan Institute, Slovenia

e-mail: bkalebic@tmf.bg.ac.rs

1. BACKGROUND

In the last decades, the use of antibiotics has constantly increased in both human and veterinary medicine. Since water pollution by these contaminants is poorly regulated, different types of antibiotics can be found in both surface and drinking water.

Antibiotics possess:

- complex structure,
- high stability,
- long-lived persistence in the environment,
- toxic effects towards organisms.

Bacterial resistance

Risk to human health!

Ciprofloxacin (CIP)

- zwitterion

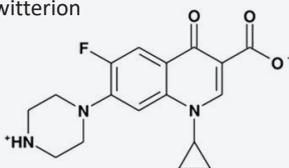


Fig. 1 CIP structure in a zwitterionic form.

2. COMPOSITE CHARACTERIZATION

- Modification of CLI to Fe₃O₄-CLI did not significantly affect the CLI crystallinity.
- Diffractions at 2θ = 35.64°, 43.23° and 62.96° suggest the presence of Fe₃O₄.

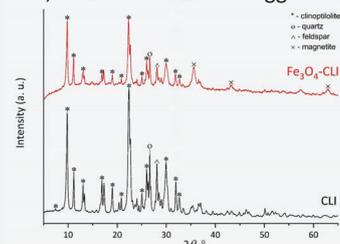


Fig. 2 PXRD patterns of CLI and Fe₃O₄-CLI.

- Fe₃O₄ nanoparticle: 5-30 nm

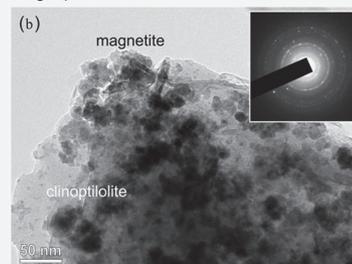


Fig. 3 TEM image with SAED pattern of Fe₃O₄-CLI (right upper corner).

- Fe₃O₄-CLI preserves magnetic properties after the CIP adsorption.

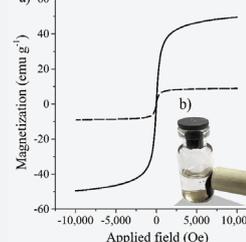
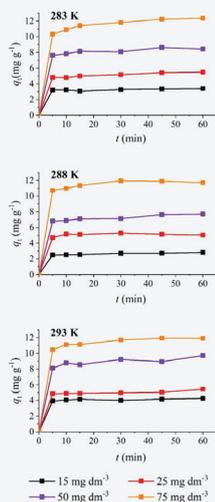


Fig. 4 The a) magnetization curve of Fe₃O₄ (solid) and Fe₃O₄-CLI (dash), and b) magnetic separation of the CIP-containing Fe₃O₄-CLI.

3. CIP ADSORPTION TESTS

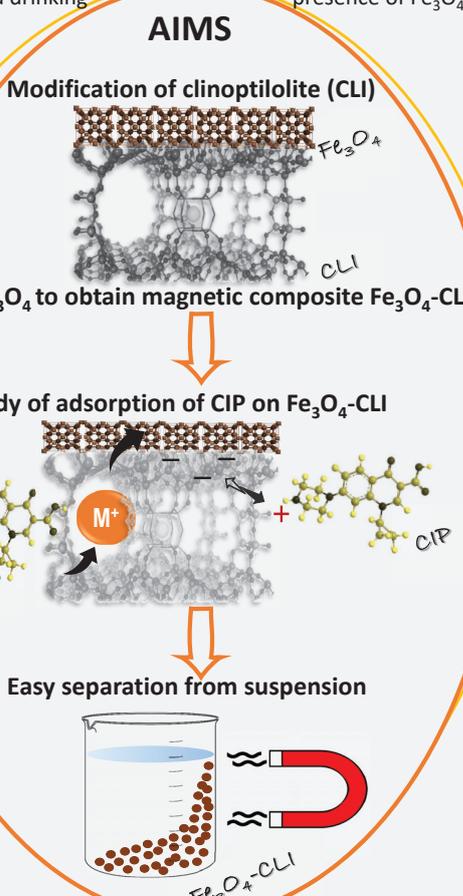
The CIP uptake increases sharply in the first 10 min of adsorption for all studied temperatures and initial CIP concentrations (Fig. 5). More than 80% of the maximum adsorption capacity was achieved within the first 10 min, indicating fast adsorption kinetics.



Lagergren's pseudo-second order equation

Langmuir isotherm model

Fig. 5 Adsorption kinetics for CIP on Fe₃O₄-CLI for different temperatures and different CIP initial concentrations.



Possible use of the spent adsorbent



Fig. 6 Antibacterial activity of CIP, CIP-CLI and CIP-Fe₃O₄-CLI towards *E. coli* (a), and *S. aureus* (b).

4. CONCLUSIONS

Natural clinoptilolite coated with nano magnetite particles is a promising adsorbent for ciprofloxacin removal from aqueous media. Spent adsorbent shows strong antibacterial properties suggesting applicability in a tertiary stage of water treatment.