



Green Method of Preparation for Phenol Formaldehyde Foams under Microwave Irradiation

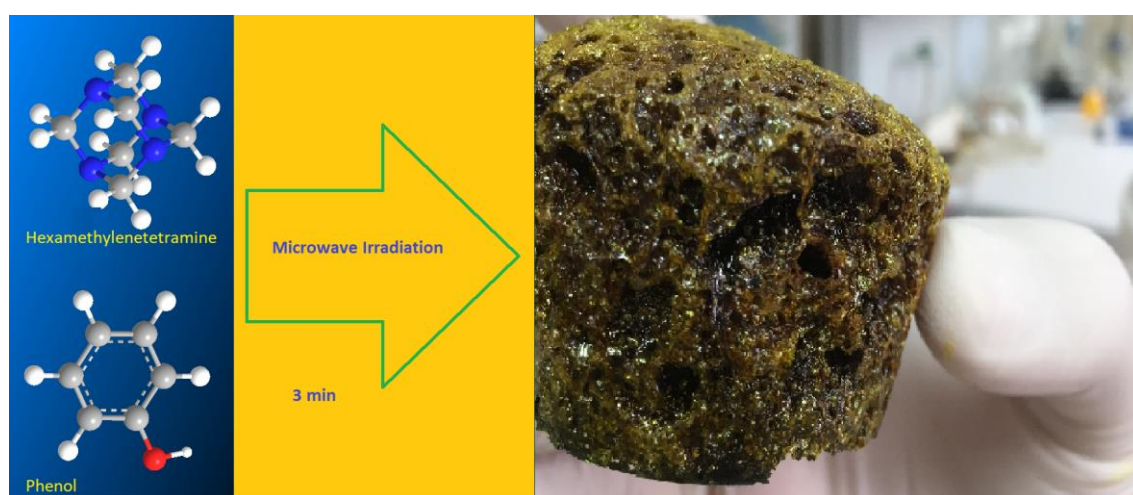
Dmitriy Khrustalev^{1,2,*}, Azamat Yedrissov¹, Anastassiya Vetrova^{1,2}, Anastassiya Khrustaleva^{1,2}

¹Nazarbayev University, National Laboratory Astana, 010000, Nur-Sultan, Kazakhstan

²Medical University of Karaganda, 100000, Karaganda, Kazakhstan

*E-mail: khrustalev@bk.ru

The production of phenol-formaldehyde foams under classical conditions is a long and labour-consuming process. Phenol-formaldehyde foams containing various fillers can be synthesized within 3-5 minutes under microwave activation. Currently this is the fastest and most energy-efficient way to produce the material.



The use of a microwave reactor allowed to synthesize phenol-formaldehyde foams without any fillers within 3-5 minutes, as well as to include copper, zinc, cobalt, lanthanum and other metals' phthalocyanines into the material in order to give it catalytic properties.

References

- [1] Pat US 4539338. E.W. Kifer et al. Phenol Formaldehyde Resoles For Making Phenolic Foam. 03.09.1985.
- [2] Pat KZ 32636. D.P. Khrustalev et al. The method of synthesis Phenol Formaldehyde Foam under microwave irradiation. 05.02.2018.
- [3] D.P. Khrustalev et al. Preparation of Phenol Formaldehyde Foam under microwave irradiation. Lambert Academic Publishing RU. (2017), p. 70.