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The work entitled: **"Analysis of thermal properties of peloids used in thalassotherapy centres"** (**EQ-011**), by **Dolores Fernández-Marcos, Carmen P. Gómez, Marta M. Mato, Lidia Casás, Alfonsina E. Andreatta and José L. Legido,** has been presented in the *XI Iberoamerican Conference on Phase Equilibria and Fluid Properties for Process Design*, which took place in Córdoba (Argentina) in October 22-25, 2018

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XI Iberoamerican Conference on Phase Equilibria and Fluid Properties for Process Design

Córdoba (Argentina) October 22-25, 2018

2019

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Analysis of thermal properties of peloids used in thalassotherapy centres

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Scientific topic: Measurement of Thermodynamic Properties. Phase Equilibria and Chemical Equilibria

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Introduction

Peloids are heterogeneous systems and consist of mixtures of a solid substrate with mineral water or seawater used for therapeutic purposes in thermal spas or thalassotherapy centres [1]. Thermotherapy is one of the therapeutic applications of peloids [2, 3], that is, the use of heat for therapeutic purposes. There are different ways of applying peloids such as plasters, cataplasms or wrapping. These forms of application, named pelotherapy, are integrated in the marine cure made in thalassotherapy centres. Thermotherapy is used in health therapies, either for thermotherapeutic or for cosmetic purposes [4].
Analysis of thermal properties of peloids is a useful tool for studying peloids and evaluating their suitability from a thermotherapic point of view [5].
This work focuses on the study of the thermal conductivity, the specific heat, and the thermal diffusivity of different peloids constituted by seawater as the liquid phase of the mixture.

Experimental methods

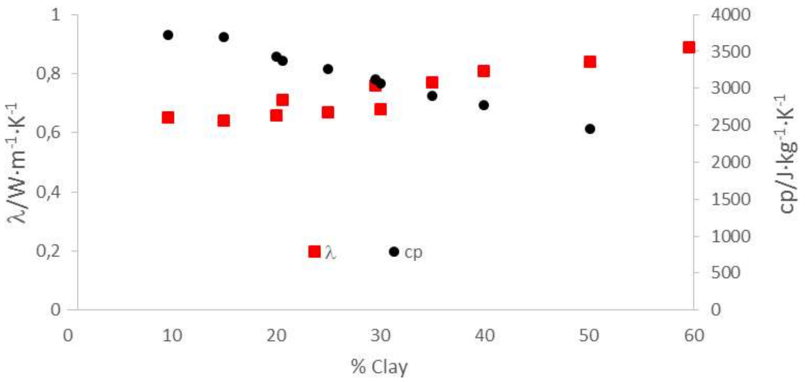
All data were measured at atmospheric pressure and at a temperature of 298.15 K. The methods used are listed below.
The thermal conductivity was determined using a Decagon KD2 Pro Thermal Properties Analyzer (Decagon Devices Inc., Pullman, WA, USA), which meets the standards of ASTM D5334 and IEEE 442-1981. This method is described in Pastoriza-Gallego et al. (2011) [5, 6].
The specific heat was determined using a CALVET microcalorimeter. The microcalorimeter was linked to a Philips PM2535 multimeter and data acquisition system [7-9].
The thermal diffusivity (D) was calculated using the expression [10]:

$$D = \rho \cdot cp / \lambda$$

Where λ is the thermal conductivity, cp is the specific heat, and ρ is the density, determined by the method described by Caridad et al. [11].

Results

The results are shown in the Figure 1.



Conclusions

The behaviour of the thermophysical properties of the samples studied is determined by the clay content. The thermal behaviour of the samples shows that the specific heat decreases while the thermal conductivity and thermal diffusivity increase with increasing clay content.

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