

## Accepted Manuscript

Experimental study on the thermal stability of a paraffin mixture with up to 10000 thermal cycles

Zhang Long, Dong Jiankai

PII: S2451-9049(16)30035-X

DOI: <http://dx.doi.org/10.1016/j.tsep.2017.02.005>

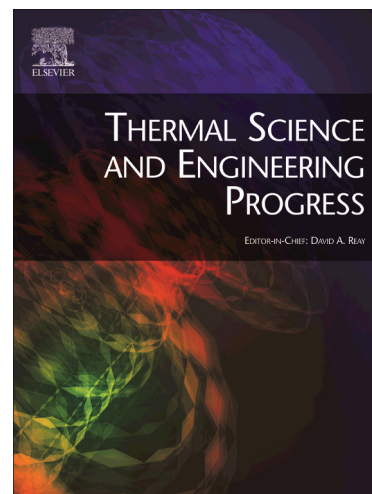
Reference: TSEP 5

To appear in: *Thermal Science and Engineering Progress*

Received Date: 27 December 2016

Please cite this article as: Z. Long, D. Jiankai, Experimental study on the thermal stability of a paraffin mixture with up to 10000 thermal cycles, *Thermal Science and Engineering Progress* (2017), doi: <http://dx.doi.org/10.1016/j.tsep.2017.02.005>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 **Experimental study on the thermal stability of a paraffin mixture with up to**  
2 **10000 thermal cycles**

3

4 Zhang Long, Dong Jiankai#

5

6 Department of Building Thermal Energy Engineering, Harbin Institute of

7 Technology, Harbin, China

8

9 **Abstract**

10

11 Thermal energy storage (TES) technologies utilizing phase change materials (PCMs)

12 have been extensively investigated and developed in the last three decades. A great

13 deal of previous research into PCMs has focused on their reliability and stability after

14 a number of repetitive thermal cycles. However, due to the heavy workload during the

15 cyclic melting and solidification processes of PCM, the number of thermal cycles was

16 normally no more than 1500, especially in the study of classic PCMs. In this research,

17 an efficient and stable accelerated thermal cycling test-bed, which could interchange

18 the positions of PCM between a heat source and a heat sink automatically and

19 periodically, was designed, constructed and tested. In addition, properties (melting

20 point and heat of fusion) of a commercial grade paraffin mixture were investigated

21 with up to 10000 thermal cycles. The experimental results presented that the

22 degeneration of the heat of fusion was 9.1% after 10000 thermal cycles while that of

Download English Version:

<https://daneshyari.com/en/article/8918926>

Download Persian Version:

<https://daneshyari.com/article/8918926>

[Daneshyari.com](https://daneshyari.com)