

Fourier transform involve in solar cooker thermal image

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Abstract

A new cooker has been used to time series of natural food cooking (solar cooker) process of foiling material reaction of thermal image. Reviews of solar box cookers have been crafted for their pious ability, strength, security, and comforting act, which is economical of any procedure we straightaway fail unreserved execute. By using a fractional Fourier transform, any ascent resemblance is eliminated, after which the suitable minimal arrangement is chosen.

Introduction

Thamizharasu et al [1] experimentally investigated the stepped solar cooker with adaptive control method. Researchers used the nanolayer of $\text{SiO}_2/\text{TiO}_2$ with different volume fractions. They attained the 37.69% (10%) and 49.21% (15%) of coating materials. Thamizharasu et al [2] verified the performance with $\text{SiO}_2/\text{TiO}_2$ material ratios of 5% to 25%. Compared to the single nanolayer coating in the conventional type cookers $\text{SiO}_2/\text{TiO}_2$ materials enhance the moist air temperature then achieved the thermal performance upto 49.21% (15%). Bhavani et al [3] have analyzed the heat transfer performance solar cooker with fuzzy logic controller. Here using the fuzzy set of mathematical representation explain the solar cooker fuzzy mode. Bhavani et al [4] investigated the energy control analysis of solar cooker with fuzzy set. Authors estimated the heat transfer process of Al_2O_3 nanoparticle mixed with black paint as show 15.14% thermal act and 7.10% nanoparticle adeptness.

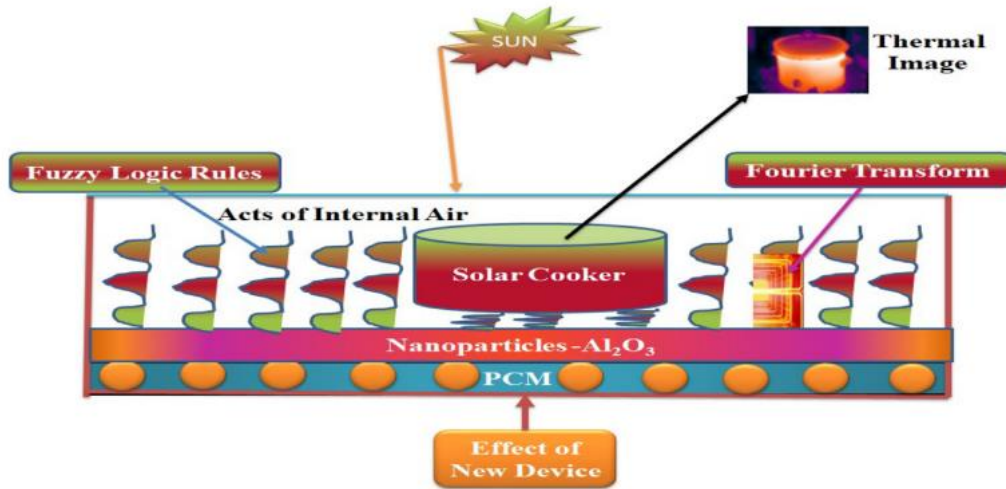


Fig. 1. Thermal image

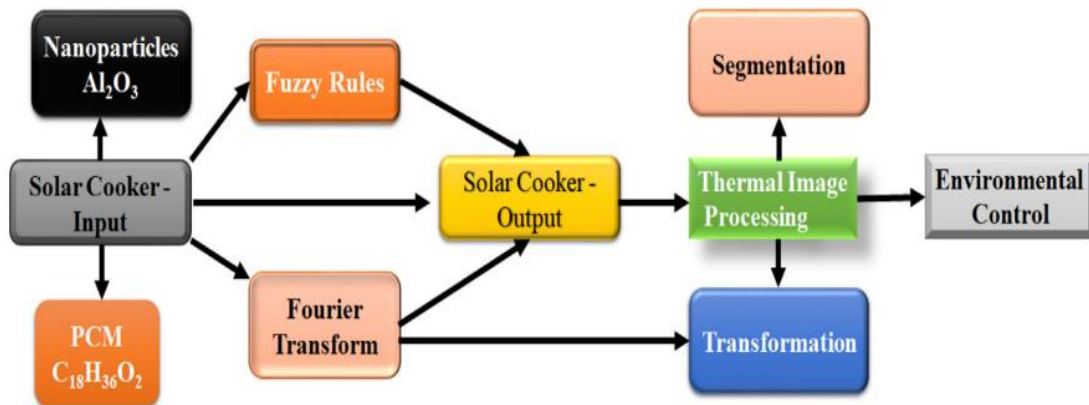


Fig. 2. Thermal image techniques

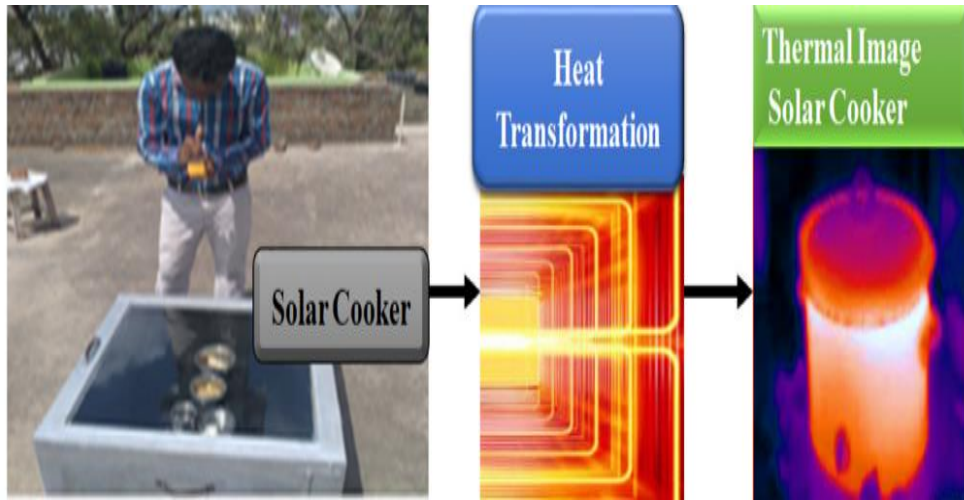


Fig. 3. Heat analyses

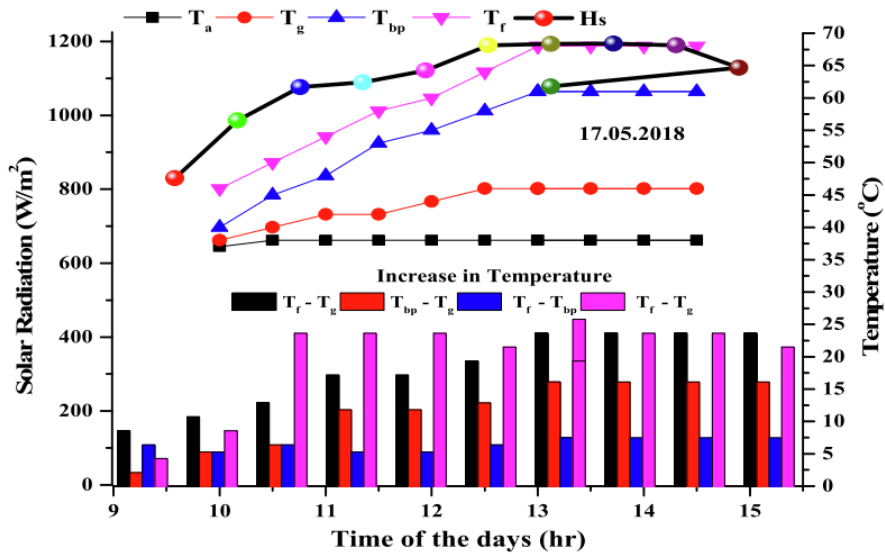


Fig. 4. Time analysis with temp.

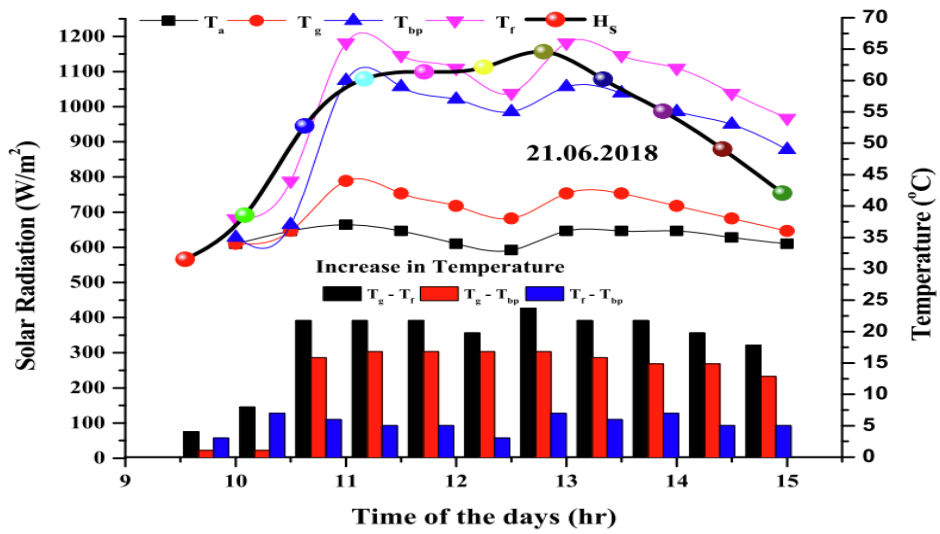


Fig. 5. NPCM-SBC

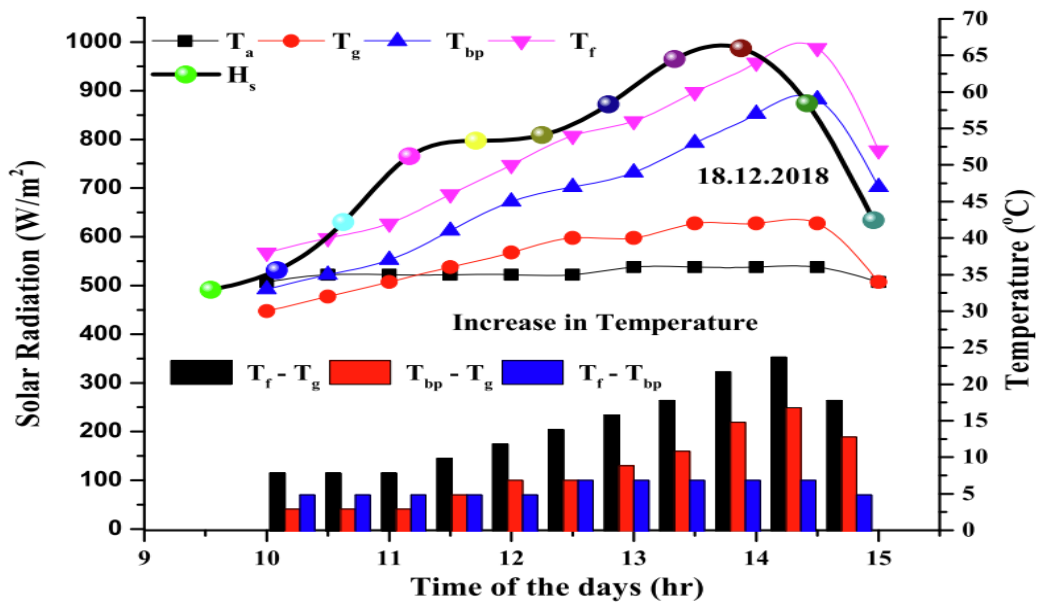


Fig. 6. NPCM-SBC - Winter

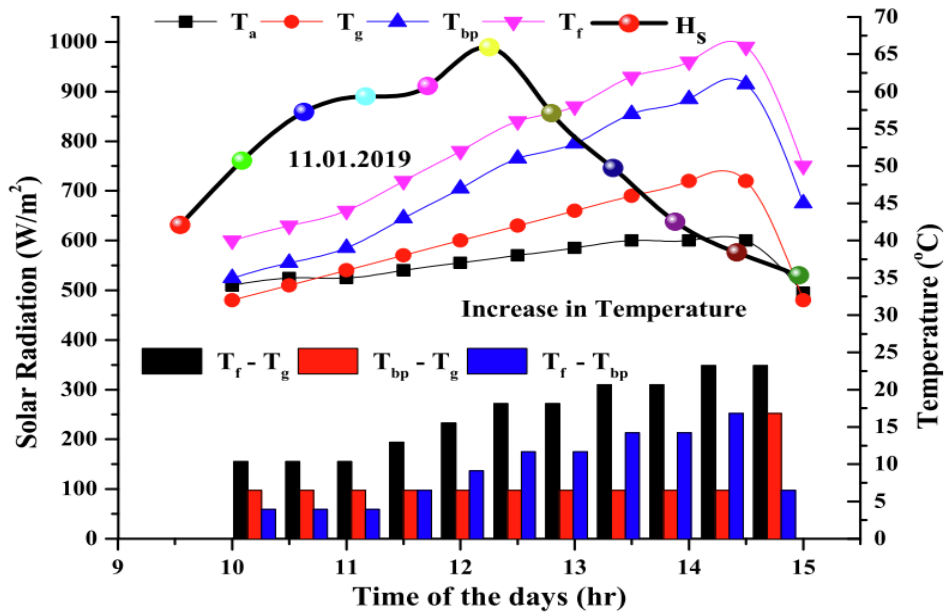


Fig. 7. Variations analysis by time

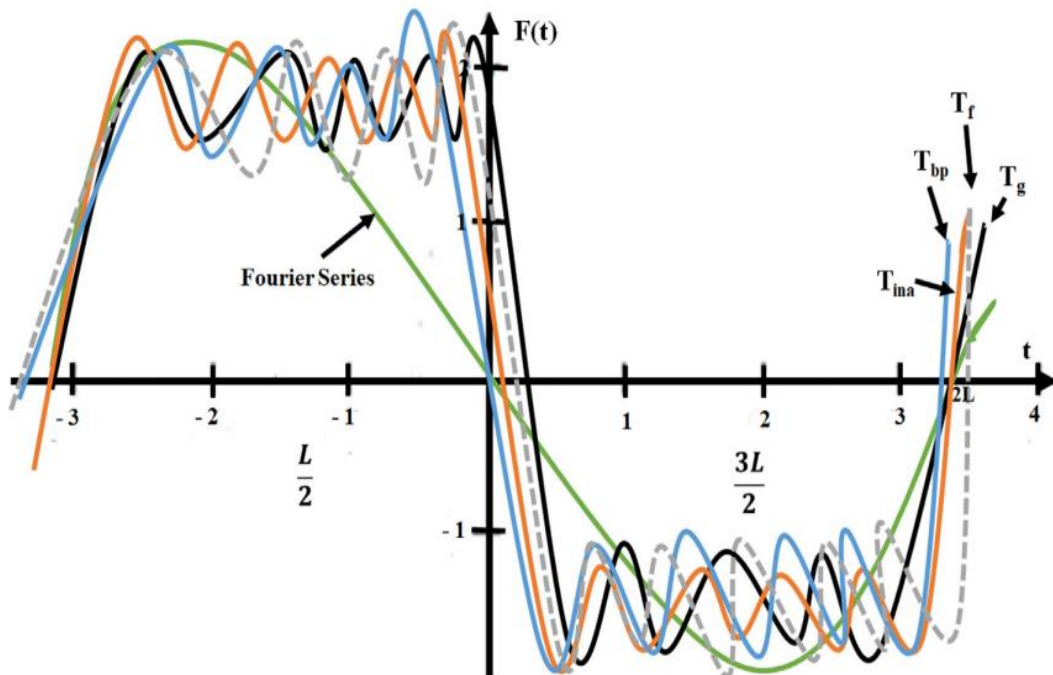


Fig. 8 food stiffness analysis

Conclusion

The segmentation used for food stuffiness is based on thermal imaging. For the support of PCM and nanoparticles, the statistically helpful thermal topographies adopted. Three categories of fuzzy logic—low, intermediate, and high—are then characterized in this technique. For cookers, glass covers, and commodities individually, accuracy of 10% is acknowledged. Total productivity has been measured at 7.6%, with influence to source occurring during specific months of the day.

Reference

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