# Article information:

Electrical-to-thermal energy conversion efficiency of conductive concrete - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0958946523000665>

# Article summary:

1. This study evaluates the electrical-to-thermal energy conversion ability of mortars reinforced with carbon nanotubes (CNTs) and nanofibers (CNFs).

2. It was found that the degree of CNT and CNF dispersion, high values of electrical and thermal conductivity, and negligible values of electrical and thermal storage capacity are critical in achieving an almost complete conversion of electrical to thermal energy.

3. The importance of the application of AC at low voltage (2V) in enhancing the nanocomposite's heating performance and electrothermal efficiency was demonstrated.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article is a scientific study on the electrical-to-thermal energy conversion efficiency of conductive concrete reinforced with carbon nanotubes (CNTs) and nanofibers (CNFs). The article is well written, providing a clear overview of the research objectives, methodology, results, and conclusions. The authors have provided sufficient evidence to support their claims, including experimental data from Dynamic Light Scattering (DLS), Electrochemical Impedance Spectroscopy (EIS), ASTM C518-04 and C1784-20 measurements.

The article does not appear to be biased or one-sided in its reporting; it presents both sides equally by discussing prior studies on electric heating as well as potential risks associated with high heating rates due to thermal shock. However, there are some missing points that could have been explored further such as potential applications for this technology or possible environmental impacts associated with its use. Additionally, there is no discussion about potential economic implications or cost savings associated with this technology which could be beneficial for readers to consider when evaluating its potential use.

In conclusion, this article provides a comprehensive overview of the research conducted on the electrical-to-thermal energy conversion efficiency of conductive concrete reinforced with carbon nanotubes (CNTs) and nanofibers (CNFs). The authors have presented sufficient evidence to support their claims while also noting potential risks associated with high heating rates due to thermal shock. While there are some missing points that could have been explored further such as potential applications or environmental impacts associated with its use, overall this article appears to be reliable and trustworthy in its reporting.

# Topics for further research:

* Potential applications of conductive concrete
* Environmental impacts of conductive concrete
* Economic implications of conductive concrete
* Cost savings associated with conductive concrete
* Thermal shock risks of conductive concrete
* Dynamic Light Scattering (DLS) measurements of conductive concrete

# Report location:

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