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Self-heating of a polymeric particulate composite under mechanical excitations

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Highlights

- A comprehensive thermo-viscoelastic model is developed to simulate the self-heating behavior
- A micromechanics-based model predicts effective viscoelastic behavior of composites
- A first-order shear deformable beam theory is formulated to evaluate the heat generation
- Experiments of composite beams under near-resonant excitations validate the model
- The test-based modeling framework provides a practical tool for design and development of energetic composites

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