

INFORMATION ON DOCTORAL THESIS

1. Full name: Nguyen Van Thanh
2. Sex: Male
3. Date of birth: 08 May 1983
4. Place of birth: Hai Duong province
5. Admission decision number: 778/QĐ-CTSV Dated: 21 August 2017 by the Rector of UET.
6. Changes in academic process: No
7. Official thesis title: Stability and nonlinear dynamic response of functionally graded carbon nanotube-reinforced composite (FG-CNTRC) plates and shells.
8. Major: Engineering mechanics
9. Code: 9520101.01
10. Supervisors: Professor Dr.Sci. Nguyen Dinh Duc
Associate Professor Dr. Khuc Van Phu
11. Summary of the new findings of the thesis:

- Thesis deals with the nonlinear buckling and post-buckling of nanocomposite plates functionally graded carbon nanotubes (FG-CNTRC) resting on elastic foundation in thermal environment. The material properties of the single-walled carbon nanotubes are depended on temperature and altered according to linear functions of the thickness. The governing equations are derived by the the third-order shear deformation plate theory taking into account von Kármán geometrical nonlinearity and solved by both the Airy's stress function and Galerkin method. In numerical results, the influences of various types of distribution and volume fractions of carbon nanotubes, geometrical parameters, elastic foundations on the nonlinear buckling and post-buckling behavior of FG-CNTRC plates subjected mechanical, thermal loading and both are presented.

- Based on Reddy's first order shear deformation theory, the nonlinear dynamic response and vibration of imperfect functionally graded carbon nanotube reinforced composite (FG-CNTRC) circular cylindrical shells subjected to an external dynamic load uniformly distributed on the surface of the shell and axial compression in thermal environment are presented.

- The thermal and mechanical stability of a functionally graded composite truncated conical shell reinforced by carbon nanotube fibers and surrounded by the elastic foundations are studied in thesis.

- To validate the proposed approach, the research results of the thesis was conducted comparing with the results of other authors. Results in the numerical form, so easy evaluation and testing, can be the reference for designers to consider using techniques in practice.

12. Practical applicability, if any: The significance remarks of this thesis may be used as important references for engineering designs.

13. Further research directions, if any:

- Research on the nonlinear static and dynamic of nanocomposite plates functionally graded carbon nanotubes (FG-CNTRC) of variable thickness subjected thermal loads and thermo-mechanic combination loads.

- Research on the nonlinear dynamic and vibration of nanocomposite plates and shells functionally graded carbon nanotubes (FG-CNTRC) of piezoelectric layer.

- Research on the nonlinear static and dynamic of eccentrically stiffened or non-eccentrically stiffened FG-CNTRC special shaped shell by using the first-order or high-order shear deformation theory.

- Consideration to different types of loads acting on the nonlinear static and dynamic stability of FG-CNTRC shell structure....

14. Thesis-related publications:

1. Nguyen Dinh Duc, Pham Hong Cong, Ngo Duc Tuan, Phuong Tran, Nguyen Van Thanh (2017), "Thermal and mechanical stability of functionally graded carbon nanotubes (FG CNT)-reinforced composite truncated conical shells surrounded by the elastic foundations" *Thin-Walled Structures*, Vol 115, Pages 300-310, (Elsevier, SCIE, Q1, IF=4.442).

2. Nguyen Van Thanh, Nguyen Dinh Khoa, Ngo Duc Tuan, Phuong Tran, Nguyen Dinh Duc (2017), "Nonlinear dynamic response and vibration of functionally graded carbon nanotube-reinforced composite (FG-CNTRC) shear deformable plates with temperature-dependent material properties and surrounded on elastic foundations",

Journal of Thermal Stresses, Vol40, Pages 1254-1274, (Taylor & Francis, SCI, Q1, IF=3.28).

3. Nguyen D Duc, Ngo Duc Tuan, Phuong Tran, Tran Q Quan, Nguyen Van Thanh (2018), “Nonlinear dynamic response and vibration of imperfect eccentrically stiffened sandwich third-order shear deformable FGM cylindrical panels in thermal environments”, Journal of Sandwich Structures & Materials, Volume 21 Issue 8, Pages 2816-2845, (SAGE, SCIE, Q1, IF=5.616).

4. Nguyen Van Thanh, Vu Dinh Quang, Nguyen Dinh Khoa, Kim Seung-Eock, Nguyen Dinh Duc (2019), “Nonlinear dynamic response and vibration of FG CNTRC shear deformable circular cylindrical shell with temperature-dependent material properties and surrounded on elastic foundations”, Journal of Sandwich Structures & Materials, Vol 21, Pages 2456-2483, (SAGE, SCIE, Q1, IF=5.616).

5. Do Quang Chan, Nguyen Van Thanh, Nguyen Dinh Khoa, Nguyen Dinh Duc (2020), “Nonlinear dynamic analysis of piezoelectric functionally graded porous truncated conical panel in thermal environments”. Thin-Walled Structures, Vol154, Article 106837, (Elsevier, SCIE, Q1, IF=4.442).

6. Ngo Dinh Dat, Nguyen Van Thanh, Vu Minh Anh, Nguyen Dinh Duc (2020), “Vibration and nonlinear dynamic analysis of sandwich FG-CNTRC plate with porous core layer”. Mechanics of Advanced Materials and Structures, doi.org/10.1080/15376494.2020.1822476, (Taylor & Francis, SCI, Q1, IF=3.28).

7. Nguyen Van Quyen, Nguyen Van Thanh, Tran Quoc Quan, Nguyen Dinh Duc (2021), “Nonlinear forced vibration of sandwich cylindrical panel with negative Poisson’s ratio auxetic honeycombs core and CNTRC face sheets”. Thin-Walled Structures, Vol 162, Article 107571, (Elsevier, SCIE, Q1, IF=4.442).

8. Nguyen Van Thanh (2021), “Nonlinear Static Stability of Stiffened Nanocomposite Plates subjected various types of loads”. VNU Journal of Science: Mathematics & Physic, accepted.

Date: November 2022
Supervisor

Date: November 2022
PhD Student

Professor Dr.Sci. Nguyen Dinh Duc

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