

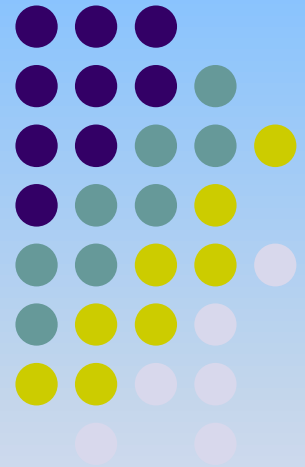


The evolution of the disciplinary structure of Nanoscience & Nanotechnology

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Purpose

- **This paper aims at having an insight into the disciplinary structure of Nanoscience Nanotechnology (N&N) and its evolution.**

Methodologies

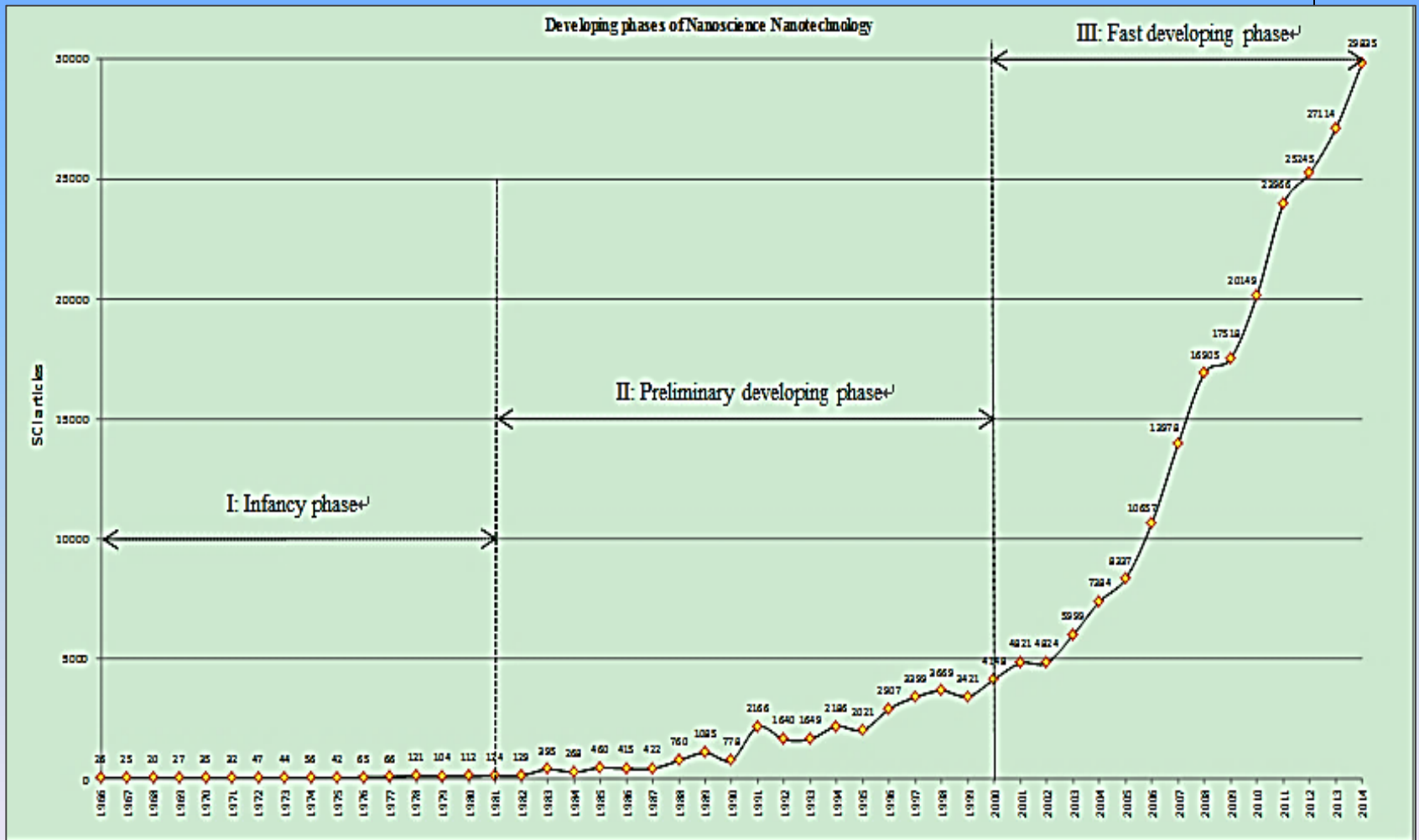
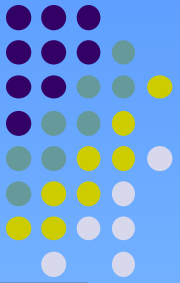


- **Social Network Analysis and Cliques Analysis embedded in Ucinet program are employed to conduct the research.**
- **WSC, Web of Science Category, is selected as N&N discipline.**

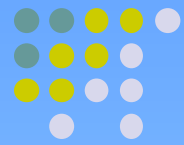
Dataset

- **Database: SCI-E**
- **Web of science category: N&N**
- **Timespan: 1900-2014**
- **Hits: From 1966,**
- **249 596 results**

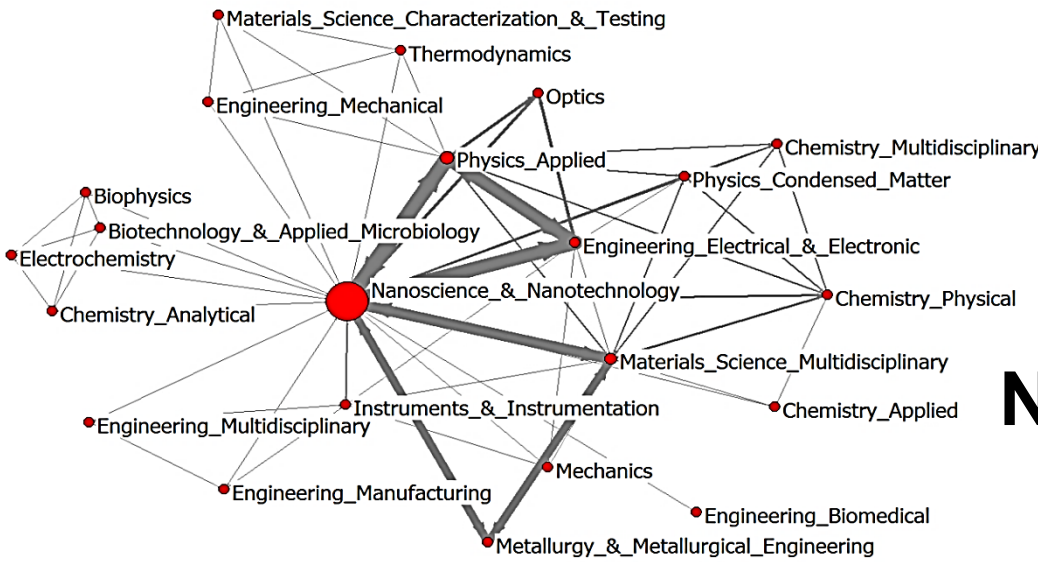
Fig. 1 Developing phases of Nanoscience and Nanotechnology (1966-2014)



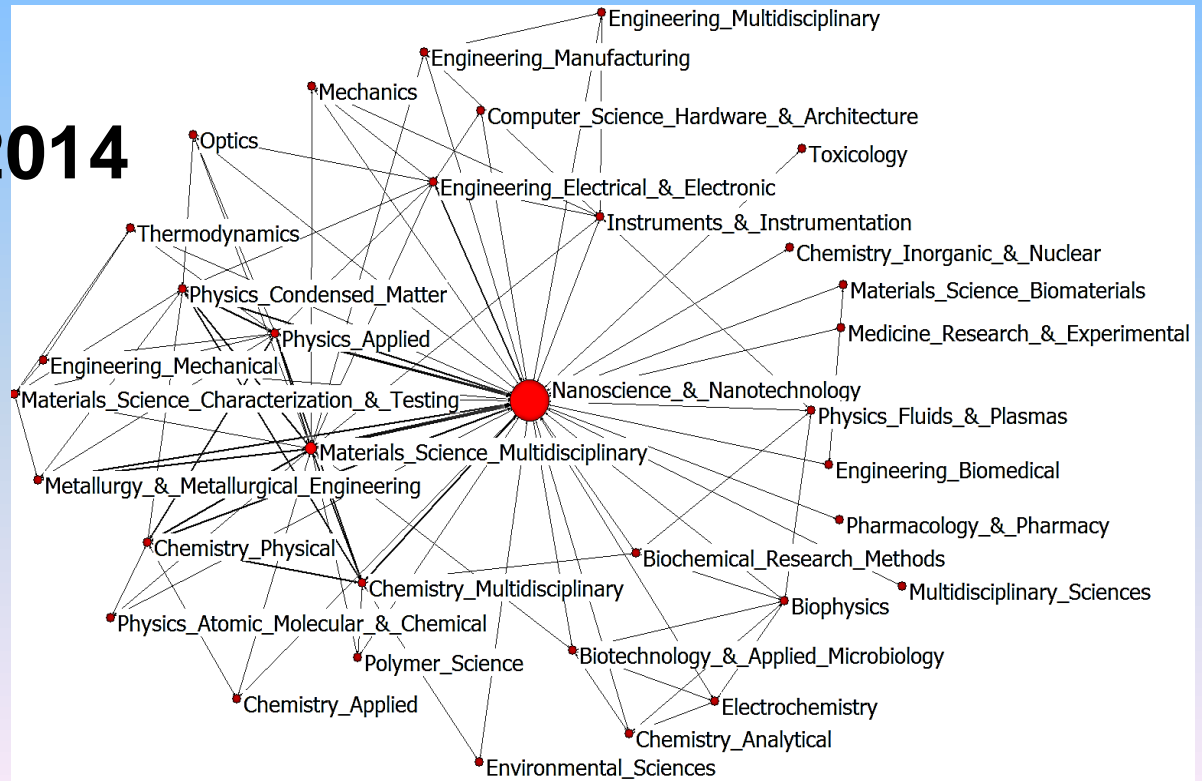
Results



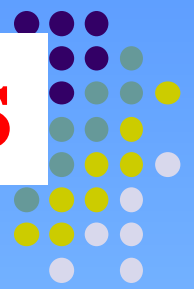
Network: 1981-1999



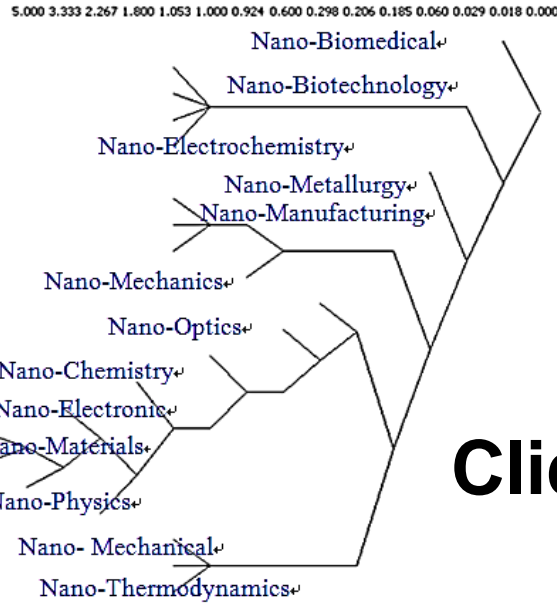
Cliques: 2000-2014



Results



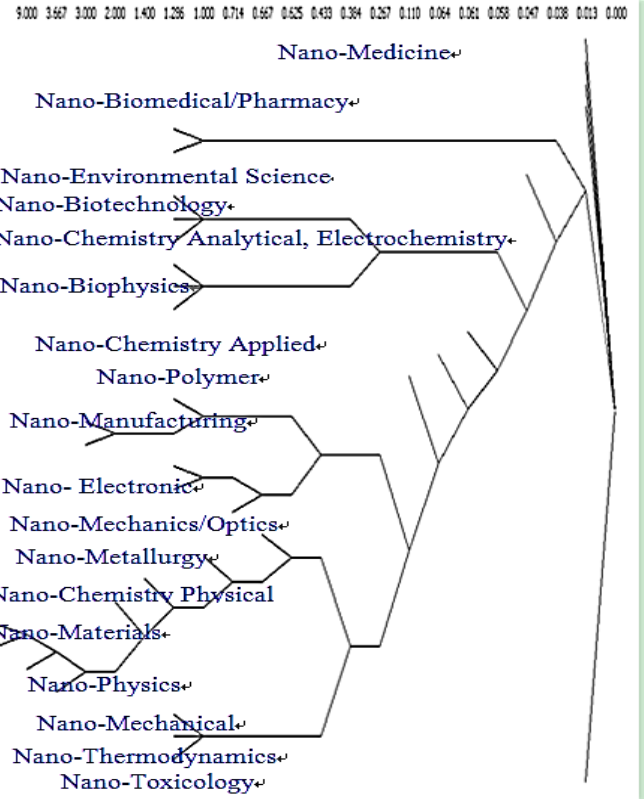
- 8 Engineering Biomedical
- 1 Biophysics
- 2 Biotechnology & Applied Microbiology
- 3 Chemistry Analytical
- 7 Electrochemistry
- 17 Metallurgy & Metallurgical Engineering
- 10 Engineering Manufacturing
- 12 Engineering Multidisciplinary
- 13 Instruments & Instrumentation
- 16 Mechanics
- 4 Chemistry Applied
- 19 Optics
- 5 Chemistry Multidisciplinary
- 6 Chemistry Physical
- 9 Engineering Electrical & Electronic
- 18 Nanoscience & Nanotechnology
- 15 Materials Science Multidisciplinary
- 20 Physics Applied
- 21 Physics Condensed Matter
- 11 Engineering Mechanical
- 14 Materials Science Characterization & Testing
- 22 Thermodynamics



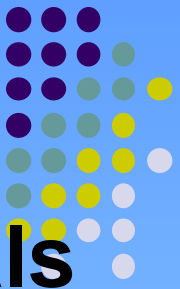
Cliques: 1981-1999

Cliques: 2000-2014

- 6 Chemistry Inorganic & Nuclear
- 22 Medicine Research & Experimental
- 24 Multidisciplinary Sciences
- 27 Pharmacology & Pharmacy
- 11 Engineering Biomedical
- 18 Materials Science Biomaterials
- 16 Environmental Sciences
- 3 Biotechnology & Applied Microbiology
- 4 Chemistry Analytical
- 10 Electrochemistry
- 1 Biochemical Research Methods
- 2 Biophysics
- 31 Physics Fluids & Plasmas
- 29 Physics Atomic Molecular & Chemical
- 5 Chemistry Applied
- 32 Polymer Science
- 15 Engineering Multidisciplinary
- 13 Engineering Manufacturing
- 17 Instruments & Instrumentation
- 9 Computer Science Hardware & Architecture
- 12 Engineering Electrical & Electronic
- 21 Mechanics
- 26 Optics
- 23 Metallurgy & Metallurgical Engineering
- 8 Chemistry Physical
- 7 Chemistry Multidisciplinary
- 25 Nanoscience & Nanotechnology
- 20 Materials Science Multidisciplinary
- 28 Physics Applied
- 30 Physics Condensed Matter
- 14 Engineering Mechanical
- 19 Materials Science Characterization & Testing
- 33 Thermodynamics
- 34 Toxicology



Conclusion



The disciplinary network structure reveals the relationships among different disciplines converged into N&N developing process clearly, and it is easy for us to identify which disciplines are connected with N&N directly or indirectly, even which disciplines are linked to a specific subject.

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