The evolution of the disciplinary structure of Nanoscience & Nanotechnology

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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)

Cliques: 2000-2014
### Cliques: 1981-1999

- **Engineering Biomedical**
- **Biotechnology & Applied Microbiology**
- **Chemistry Analytical**
- **Electrochemistry**
- **Metallurgy & Metallurgical Engineering**
- **Engineering Manufacturing**
- **Engineering Multidisciplinary**
- **Instruments & Instrumentation**
- **Chemistry Applied**
- **Optics**
- **Chemistry Multidisciplinary**
- **Chemistry Physical**
- **Engineering Electrical & Electronic**
- **Nanoscience & Nanotechnology**
- **Materials Science Multidisciplinary**
- **Physics Applied**
- **Physics Condensed Matter**
- **Engineering Mechanical**
- **Materials Science Characterization & Testing**
- **Thermodynamics**

### Cliques: 2000-2014

- **Chemistry Inorganic & Nuclear**
- **Biological Research Experimental**
- **Multidisciplinary Sciences**
- **Pharmacology & Pharmacy**
- **Engineering Biomedical**
- **Nanomaterials Science Biomaterials**
- **Biotechnology & Applied Microbiology**
- **Chemistry Analytical**
- **Chemistry Physical**
- **Engineering Electrical & Electronic**
- **Multidisciplinary**
- **Chemistry Physical**
- **Materials Science Multidisciplinary**
- **Physics Applied**
- **Physics Condensed Matter**
- **Engineering Mechanical**
- **Materials Science Characterization & Testing**
- **Thermodynamics**
- **Toxicology**

### Results

- **Nano-Biomedical/Pharmacy**
- **Nano-Environmental Science**
- **Nano-Biotechnology**
- **Nano-Chemistry Analytical, Electrochemistry**
- **Nano-Biophysics**
- **Nano-Chemistry Applied**
- **Nano-Polymer**
- **Nano-Manufacturing**
- **Nano-Electronic**
- **Nano-Mechanics/Optics**
- **Nano-Metallurgy**
- **Nano-Chemistry Physical**
- **Nano-Materials**
- **Nano-Physics**
- **Nano-Mechanical**
- **Nano-Thermodynamics**
- **Nano-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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