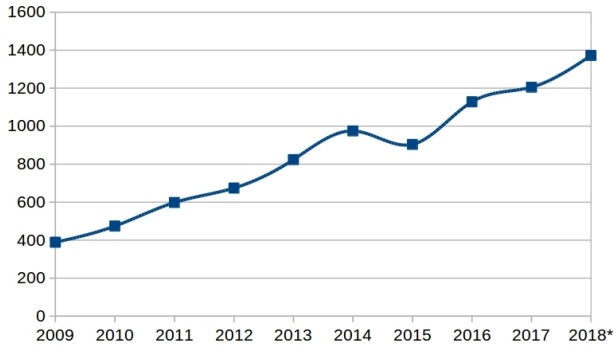


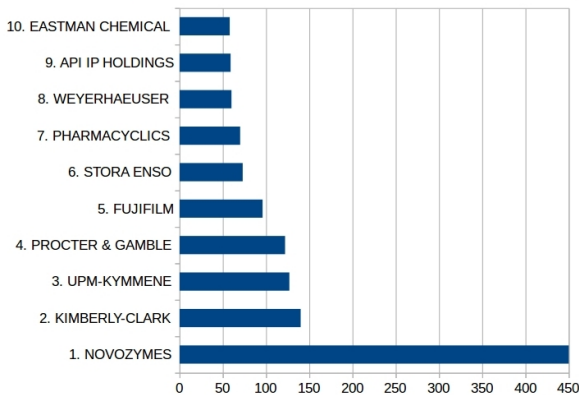
## NANOCELLULOSE PATENTING 2009-2018

SOURCE: TEQMINE NANOCELLULOSE TECHNOLOGY SCAN, 2018\*-Estimate



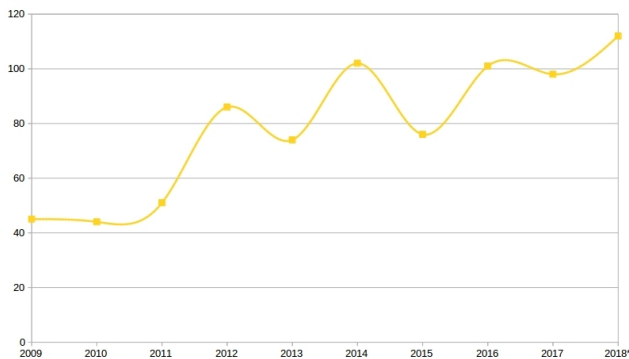
## TOP-10 FIRMS NANOCELLULOSE PATENTS

SOURCE: TEQMINE NANOCELLULOSE TECHNOLOGY SCAN, 2018\*-Estimate



## MEMBRANE APPLICATIONS NANOCELLULOSE PATENTS 2009-2018

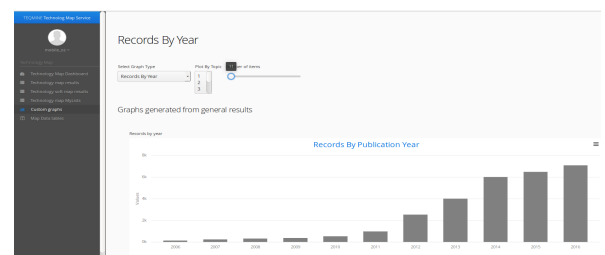
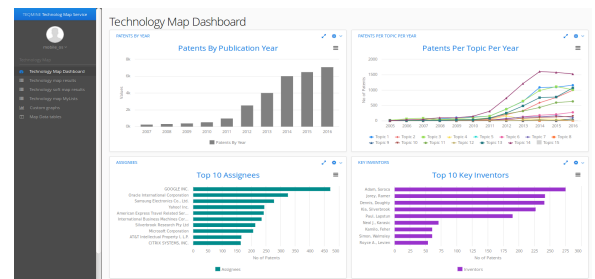
SOURCE: TEQMINE NANOCELLULOSE TECHNOLOGY SCAN, 2018\*-Estimate



- **Nanocellulose is one of the fastest growing technology areas** for the forests products industry.
- **TEQMINE Technology Scan** has identified over 10,000 nanocellulose patents, and new ones are added monthly.
- **Over 1000 new nanocellulose patents** are published annually in USPTO/EPO/PCT
- **Patenting has tripled since 2009**, when the area consisted of only 400 new patents annually.
- **Growth is likely to continue**, as new firms and regions enter the nanocellulose race.
- **Patents represent major business risk for firms operating in the nanocellulose space.**
- **Leading patentees** are well established firms with clear business focus.
- **Several new firms are entering the nanocellulose technology and market.**
- **Leading inventor countries** are: USA, Japan, Finland, Denmark and Canada.
- **Chinese inventors** are increasing patenting.
- **Nanocellulose technology is being split into new and specialized technology and technology domains**, such as membranes, medical applications, pharmaceuticals, and so forth.
- **Firms are increasingly following specialized patenting and technology strategies.**
- **Membrane applications total 1020 records.** Includes patents with claims related to membranes.
- **UPM-Kymmene is leading patent company in the Membrane space**, followed by **Hollingsworth & Vose, Xyleco, and Stora Enso.**
- **Membrane patent race is likely to continue as intensive.**
- Note about data, sources and graphs: All data from TEQMINE's AI Technology Scan (May 2018). Patent data from USPTO/EPO/PCT.

# ABOUT NANOCELLULOSE TECHNOLOGY SCAN

- **MONITOR AND ANALYZE EASILY** *Nanocellulose patenting and technology trends*
- **UNIQUE WAY OF CAPTURING** Traditional patent information methods will fail to capture accurately this diffuse innovation area
- **RECOGNIZE TROLLS AND NEW INNOVATIONS** regardless you know the company or not
- **THE AI FOR PATENT AND TECHNOLOGY INTELLIGENCE.** Based on Teqmine's pioneering machine-learning techniques to read, classify and monitor patent information
- **OVER 10,000 NANOCELLULOSE PATENTS** and counting with monthly updates
- **SOFTWARE-AS-A-SERVICE** Access on-line anywhere  
*Access and read full-text patents*  
*Search and Analyze*  
*Create MyCollections*  
*Visualize*  
*Download*



| Application | Patent    | Title  | Inventor                 | Assignee         |
|-------------|-----------|--|--------------------------|------------------|
| 20120125    | 8,212,121 | Method of and system for analyzing gill fish using | Yoon, H. S.; Park, H. S. | General Electric |
| 20120125    | 8,212,121 | Method of and system for analyzing gill fish using | Yoon, H. S.; Park, H. S. | General Electric |
| 20120125    | 8,212,121 | Method of and system for analyzing gill fish using | Yoon, H. S.; Park, H. S. | General Electric |
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| 20120125    | 8,212,121 | Method of and system for analyzing gill fish using | Yoon, H. S.; Park, H. S. | General Electric |

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