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## Patent Analysis

by Pete Conley

Boustead Securities, LLC 

## Head of Intellectual Property (IP) Banking

# Pete Conley

Peter Conley joined Boustead Securities in 2014. Mr. Conley has over 25 years of experience at the intersection of IP-related investment banking, equity capital markets and the forecasting of emerging new technologies. Mr. Conley's investment banking focus is providing equity financing and M&A services to small-cap public companies with promising disruptive technologies and strong intellectual property (IP). In addition to his role at Boustead, Mr. Conley is currently the Chief Operating Officer of ipCreate, a global leader in strategic innovation and patent quality services, where he is involved in creating and monetizing strategic patent portfolios through a variety of transaction types and deal structures — including patent sales, joint ventures, M&A and IP spin-offs into private or public companies.

Prior to joining ipCreate in 2012, Mr. Conley's 25-year investment banking and capital markets experience spans the financing of over 200 small-cap technology companies; most recently as Senior Managing Director at MDB Capital Group from 2003 to 2012, where he led the firm's efforts for IP-based investment banking and IP equity research, culminating in the development of the PatentVest patent intelligence platform. Previous to that role, he was co-founder and Director of Research for The Analytiq Group / RDEX Research, an institutional equity research firm focused solely on patent research and analysis covering over 600 public companies and independently ranked for alpha in the top 10% of all ranked U.S. research firms.

Mr. Conley also served on the founding team of E\*Offering, the investment bank of E\*Trade, where he was Managing Director and Head of Equity Capital Markets. Funded by General Atlantic, Softbank, NEA and Battery Ventures, E\*Offering was ranked by IDD as #1 internet investment bank with 30% market share and involvement in nearly 1 out of 2 internet IPOs from 1999 to 2000. From 1991 to 1998, Mr. Conley was Head of Institutional Sales at Roth Capital Partners. Mr. Conley began his career with Lehman Brothers in 1988. Mr. Conley is enrolled at the University of London, Center for Financial and Management Studies, SOAS pursuing his MBA.

Mr. Conley holds FINRA securities licenses Series 7, 24, 63, 79, 86 and 87.

**Three (3) Key Takeaways:**

**1. Dan Lynn is the Expert in “Oxidation Reduction Potential in Water for Pathogen Reduction” (“ORP”) Technology and related IP:** As stated on Slide 4 of the BST deck, Dan Lynn is indeed the expert in the next-generation of ORP technology. This fact is objectively validated by the patent prosecution record of the primary USPTO examiner and IP expert in the ORP technology domain Hayden Brewster (see attached). This was not even close.

- a. By background, Hayden Brewster received his JD (IP Law) / MBA from the University of Akron and MSc in Environmental Engineering from Rensselaer Polytechnic Institute (RPI) and BSc from Columbia in Chemical Engineering. In addition, Mr. Brewster is a certified Professional Engineer (PE).
- b. Mr. Brewster has been a Patent Examiner at the USPTO since 2012, starting as an entry level GS-7 Patent Examiner and now ascending to Senior Patent Examiner GS-14 (GS-15 is the top level in the USPTO).

In 2019, Hayden, R. Brewster was a Patent Examiner at the Patent and Trademark Office in Alexandria, Virginia. Brewster began working at the Patent and Trademark Office in 2012 with a starting salary of \$67,589. Since then, Brewster's salary has increased to \$120,526 in 2019.

Hayden, R. Brewster is a GS-14 under the general schedule payscale:

Year	Occupation	Paygrade	Base Salary	Bonus	Location
2019	Patent Examining	GS-14	\$120,526	\$0	Alexandria, Virginia
2018	Patent Examining	GS-13	\$105,809	\$2,525	Alexandria, Virginia
2017	Patent Examining	GS-13	\$105,809	\$1,731	Alexandria, Virginia
2016	Patent Examining	GS-12	\$88,101	\$1,755	Alexandria, Virginia
2015	Patent Examining	GS-12	\$87,229	\$2,330	Alexandria, Virginia
2014	Patent Examining	GS-11	\$77,658	\$914	Alexandria, Virginia
2013	Patent Examining	GS-07	\$67,589	\$0	Alexandria, Virginia
2012	Patent Examining	GS-07	\$67,589	\$0	Alexandria, Virginia

c. USPTO patent examiner’s compensation and career track are determined, in part, by their (dis)allowance rate – the lower the allowance rate, the higher / faster their compensation and career grade rise.

As shown below, Mr. Brewster is in Art Unit 1779 which covers “Chemical Apparatus, Separation and Purification, Liquid and Gas Contact Apparatus” which is the relevant technology domain for BST / ORP.

Mr. Brewster’s Allowance Rate is 45.29% which is 21% below the average allowance rate of his unit and approximately 35% below the average allowance rate of the USPTO as a whole. Importantly, his stringent office actions and allowance rate has resulted in an exemplary 0.00% challenge rate post-grant. Hence, his fast-track career and comp reflect this.

## Examiner Analysis

### Examiner Profile

Allowance Rate	Average Time of Allowance	Average # of Office Actions	% Challenged Post-Grant
45.29%	2.9 Yrs	3.2	0%
57.52%	2.6 Yrs	3.1	0.08%

d. Mr. Brewster was the Primary Examiner for 11 of 17 issued USPTO patents for Dan Lynn and BioSecurity Technology. In (sharp) contrast to Mr. Brewster's office action track record (see attached) –

1. Dan Lynn / BST received an overall Allowance Rate of 83.33% on 11 issued patents versus 45.3% (+84% higher) and on 7 of the last 8 applications, received a 100% allowance rate versus 45.3% (over 100% higher).
2. The Average Time of Allowance for 11 issued patents was 16.5 months versus 34.8 months (less than 50% allowance time) and for the most recent 7 issued patents was 8 months versus 34.8 months (less than 75%).
3. Net / net, the USPTO views Dan Lynn and BST as the subject-matter expert in ORP.

### Portfolio Overview

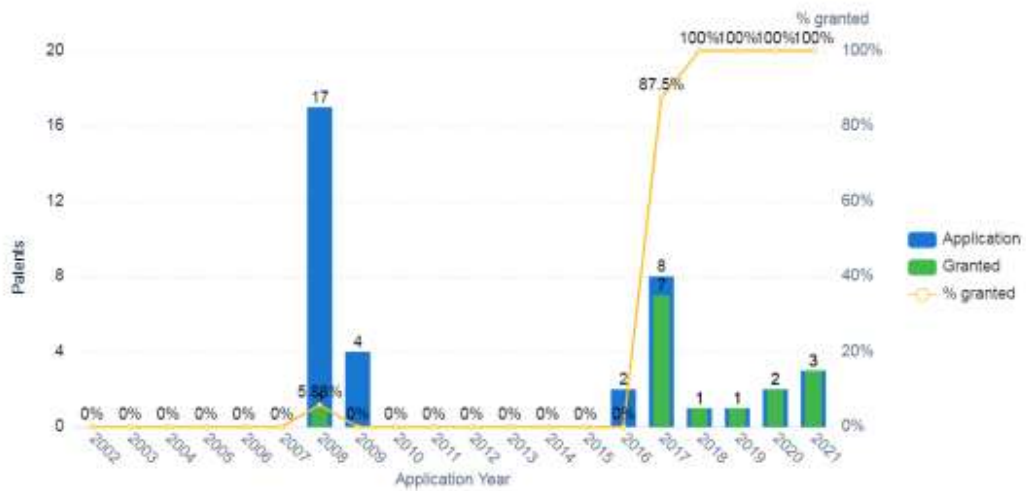
Understand the total number of applications, and how they're broken down into simple families, PCTs and active patents (applications and issued patents).

Total Application(s)	Multi-country application(s)	PCT Application(s)	Current Active Patent(s)
38	4	7	14

2. **BST is leading a resurgence in ORP with Next-Generation technology as shown in the graphics below.** As shown in Application and Grant Trend, there has been an acceleration by BST in new IP filings and grants from 2017 – 2021.

### Application and Grant Trend

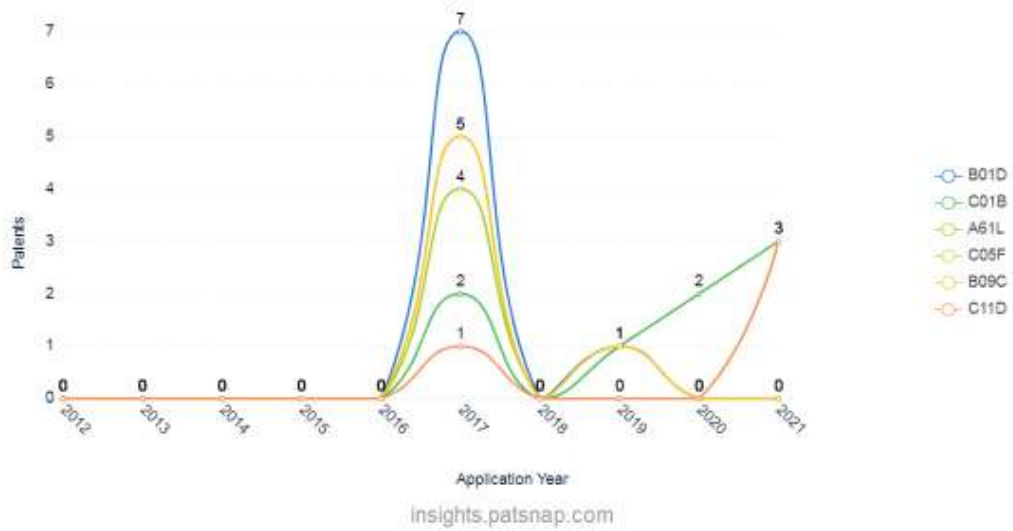
Analyze the annual application trend of the company. This chart shows the number of grants resulting from applications filed in the same year, indicating the company's filing success rate over time. Blue represents the application trend and green represents the trend of granted patents resulting from applications of the same year. Example: if a 2012 patent application is granted in 2014, the granted patents will appear in 2012 in green.



As shown in Emerging Technologies, the IP filings have occurred in new IPC Codes that did not exist 5 years ago. This is indicative of BST as the emerging leader in next-generation ORP technologies.

### Emerging Technologies

Understand the new technology areas the company has invested research and development in the last 5 years. This can help highlight new areas of research and development beyond their previous technology focus. Emerging technologies are defined here as: 1) IPCs where applications only exist in the last 5 years; 2) IPCs with a high rate of applications in the last 5 years (point 2 is not considered if there are more than 10 IPCs identified in point 1).



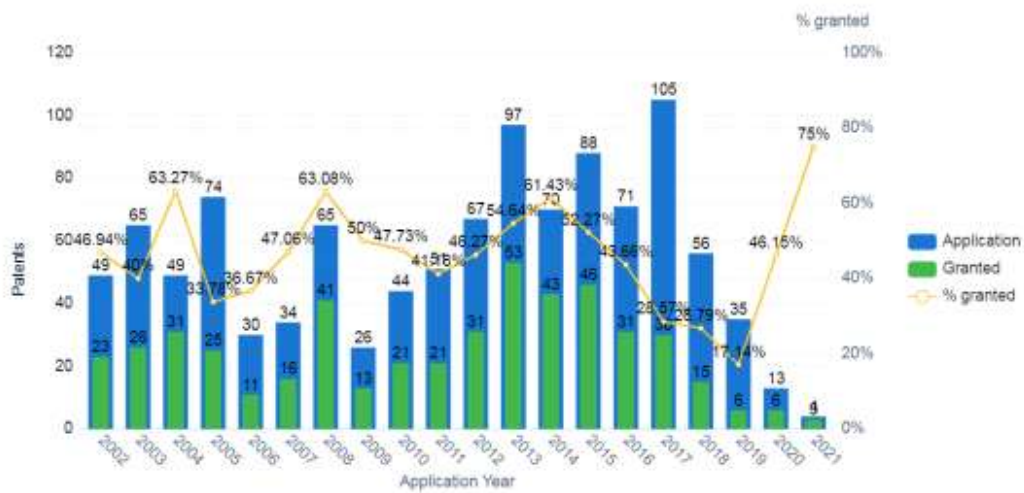
The Application and Grant Trend graphic below shows a sharp drop off in IP activity from the incumbents from 2017 – 2021. This exemplifies a passing of the torch.

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### Application and Grant Trend

Analyze the annual application trend of the technology. This chart shows the number of grants resulting from applications filed in the same year. This is helpful for understanding the rate of applications over a period of time, whether the technology is recent, or whether it is heading towards stagnancy. The grant rate is useful to understand the date from which the technology protection is established and the rate of successful applications over a period of time. Blue represents the application trend and green represents the trend of granted patents resulting from applications of the same year. Example: if a 2012 patent application is granted in 2014, the granted patents will appear in 2012 in green.



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As shown in Top Countries, ORP has historically been dominated by Asian companies (65% vs US 11%). However, the Top Assignees of Key Technologies graphic shows BST rising to a 3-way tie for 2<sup>nd</sup>.

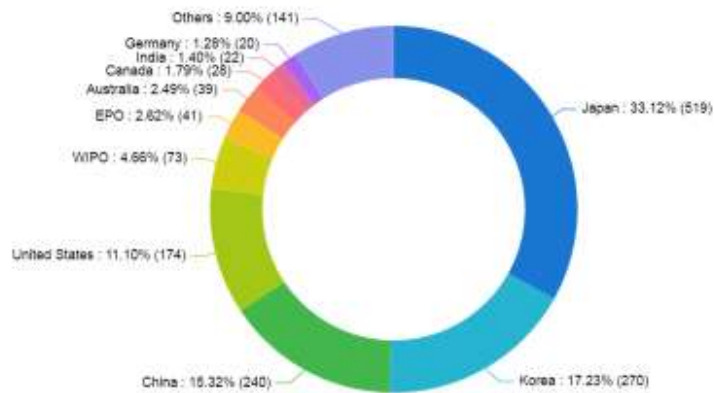
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## Top Countries

Shows the geographic coverage of where patent applications have been filed. This gives an indication of the targeted geographic markets the technology is most prominent and commercialized in. This is useful for companies to plan their filing strategy – ensuring their portfolio covers the top jurisdictions making them an attractive acquisition target. It may also help you identify untapped markets for this technology.

The chart displays one document per application and is calculated using the latest publication.

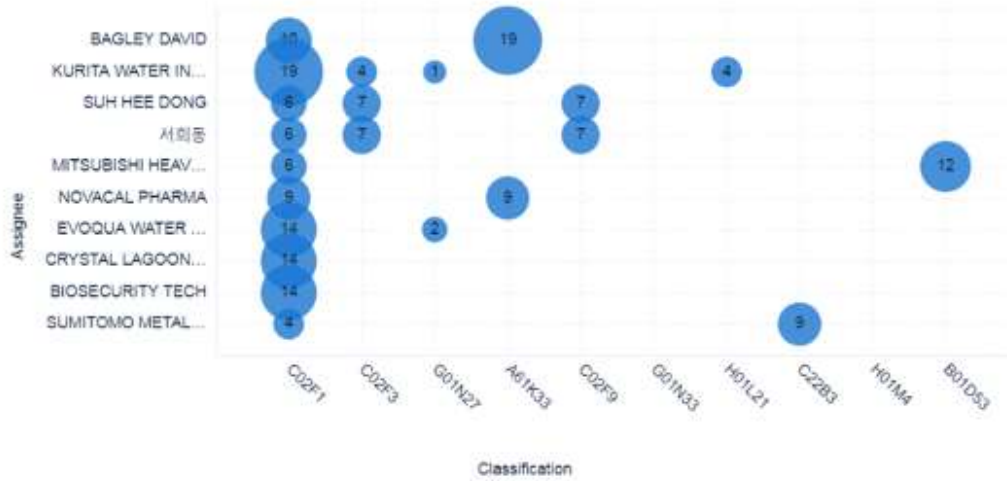


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### Top Assignees of Key Technologies

Pinpoint the major players in the technology space by understanding the top assignees within different key technology areas. This helps you locate potential partners for licensing, potential threats of litigation, and targets for invalidation.



3. The Assignee Concentration graphic shows 100% of the IP concentrated in the Top 10, up from 37% in 2019. This high concentration presages further consolidation / increased M&A activity.

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### Assignee Concentration

Analyze the market share the top companies in the technology field possess; helping to assess the level of competition and any monopolization in the technology field over a period of time.

Definition of market share: The ratio of the number of applications of the top 10 assignees to the total number of applications. (Where there are joint assignees, the application will be considered multiple times).



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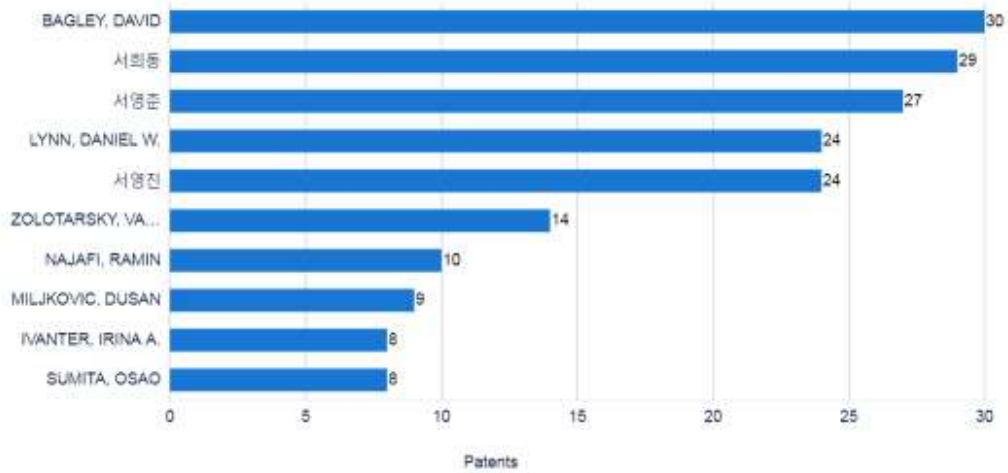
On the Top Inventors graphic, Daniel Lynn is tied for 4<sup>th</sup> place of the Top Inventors in the field. It should be noted #1 -3 inventors are from 10 – 15 years ago (1<sup>st</sup> Generation).

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### Top Inventors

The graph shows the top inventors in the technology field. This information is useful for evaluating the work of top performers in a specific technology field or for recruiting inventors.



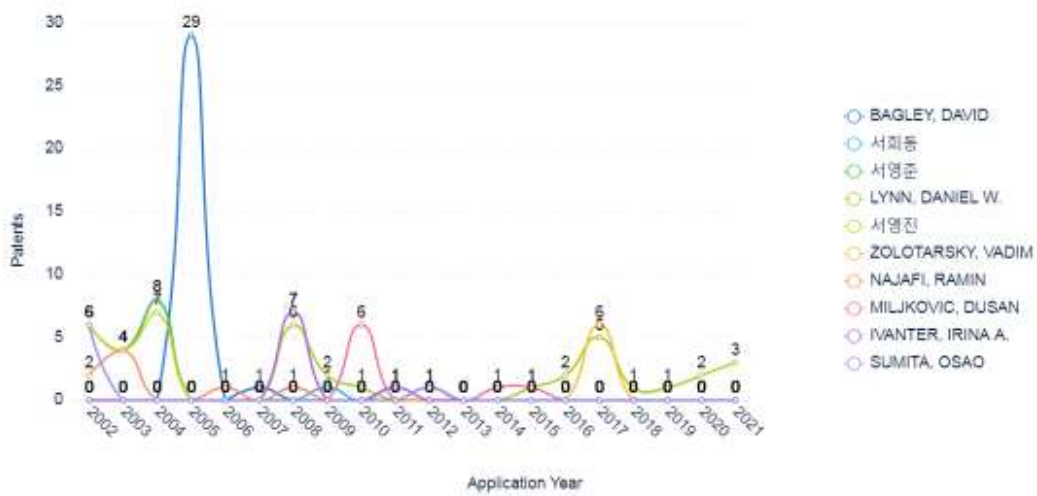
This is validated in the Application Trend timescale graphic below. Interestingly, all the other top inventors in the space collaborate with one another – except Dan Lynn. This exemplifies a high degree of novelty and unique innovation.

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### Application Trend of Inventors

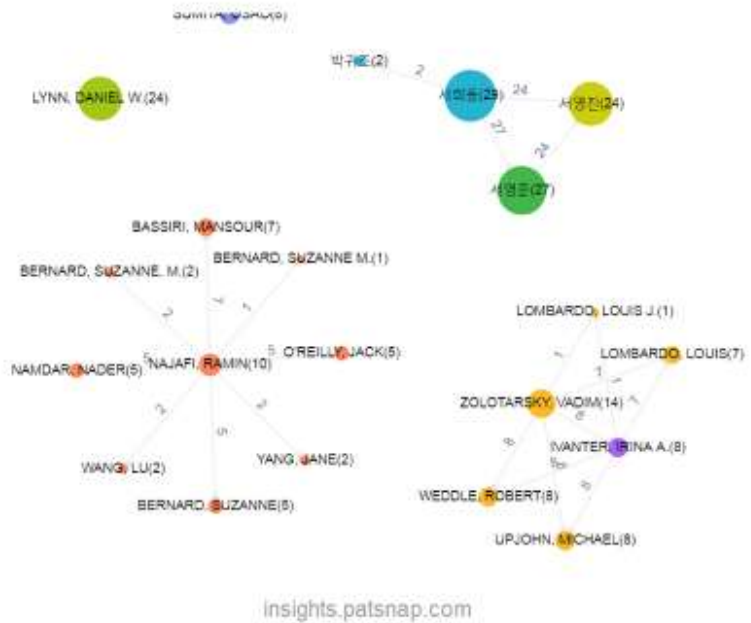
Yearly application trend of top inventors can help you identify inventors with the highest patenting activity in the most recent years. This identifies emerging or existing talent in the technology field, and you may also identify the inventing cadence of certain inventors:



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### Analyze inventor partnerships

Assess the relationships between top inventors to identify teams who work together in the technology space. This may represent talent groups for recruiting or collaboration opportunities.



Not surprisingly, major players in BST's value chain are finding their way to Dan's door. Given his standing as the expert in the ORP domain and the uniqueness of his inventions, there will be significant value creation in BST's IP as commercialization begins to scale and major players adopt the company's technology.