CASE STUDY

Carbon | uncountable

Carbon accelerates digital production with a centralized platform for materials data

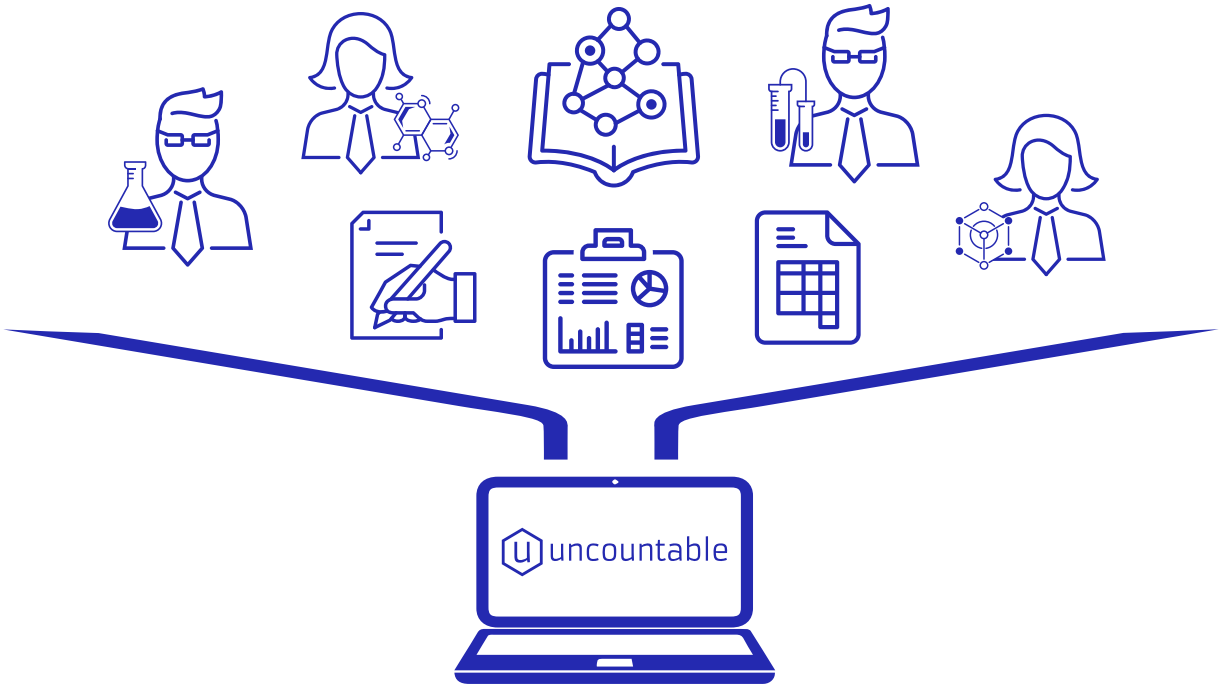
Carbon, a 3D printing technology company founded in 2013, has played a major role in advancing digital production. With offerings from 3D printers to cloud-based design tools to the materials themselves, Carbon helps businesses develop better products and bring them to market faster.

Today, Carbon's materials team develops resins for everything from life sciences and dental applications to everyday consumer hardware. The team has used Uncountable since 2018 to help them manage their data, make important decisions on formulas, and get new materials to production.

Though they started using Uncountable for only a few projects, Carbon quickly realized the benefits of having one integrated system to collect their materials data and support future development efforts.

"Uncountable lets us collect data, synthesize it, and consistently turn it into meaningful learnings."

Making a siloed, manual process more collaborative



As a high-growth 3D-printing company constantly creating better materials for new applications, Carbon faced the challenge of organizing and connecting even small volumes of data. Experiment results were often stored separately from formulas, leading to work becoming drawn out or repeated unnecessarily. Marie Herring, a materials scientist at Carbon explains how they managed R&D data before Uncountable.

"We used to work with outdated tools for the task, like Excel. Our data would be spread out over different notebooks and documents." She and her colleagues lacked a single centralized location to gather and analyze their findings and formulations, a problem that was exacerbated by the shift to mostly remote work in 2020. "It's extremely helpful to put all your formulations in one place rather than a spreadsheet with a bunch of tabs," says Justin Poelma, another materials scientist at Carbon.

"It's like a connected lab notebook on steroids"

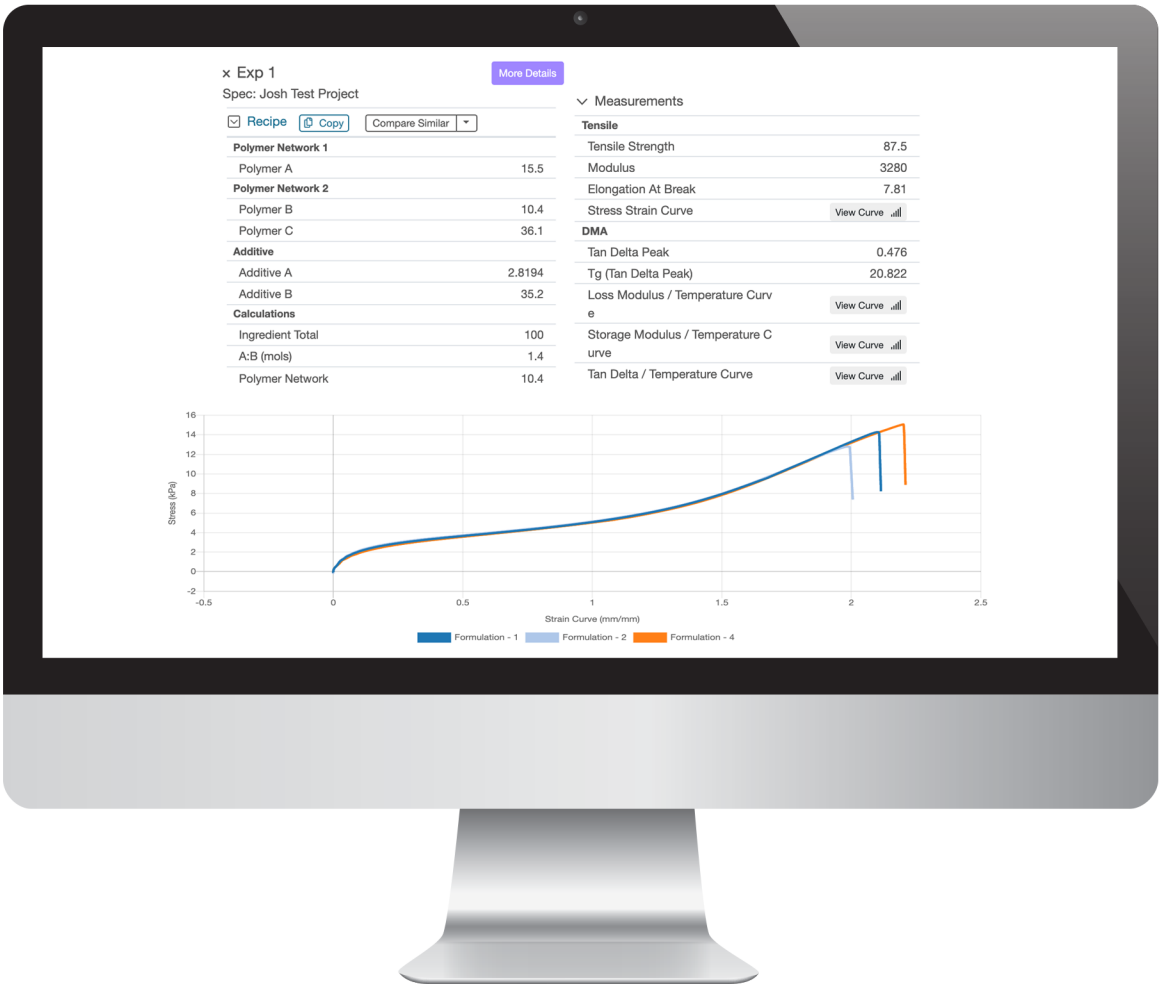
With Uncountable in place, scientists can work together on projects more effectively. "If I collaborate with another team member," says Nick Carmean, staff scientist at Carbon, "I can log in and see exactly which correlations and formulations they've already experimented with. There's no wondering where we need to dig deeper—it helps me have the right conversations with my colleagues from the start."

Automated stoichiometric balancing makes life easier

One of the most cumbersome tasks for materials scientists is stoichiometric balancing, a requirement for successful polymer development that's typically done using complex Excel formulas. Carbon's scientists have this done automatically on the Uncountable platform, saving them hours of Excel manipulation over the course of a project.

"Having the data directly connected to each formulation has gone a long way."

It's especially valuable when sharing data about each team member's formulations, says Herring. "When a scientist develops a new material, all of the details of the synthesis are there in Uncountable. If I want to work on that project, there's no need to go back and re-calculate the stoichiometry."



Increasing the breadth and pace of exploration

After several years of using Uncountable, one of the biggest benefits for Carbon has been the ability to quickly learn from their formulation data and get new materials to their commercial production team. "Uncountable helps us understand whether we're exploring enough, what else we might try, and whether there are other considerations," says Herring. "We get to that point faster, and it speeds up the whole R&D process."

"The automation is saving us a lot of time. Where it used to take a full day to analyze a set of data, it's basically immediate."

The materials team has saved hours on each analysis by automating the conversion of data generated from machines that perform various tests into meaningful curves and graphs in Uncountable. By removing manual steps and using Uncountable visualizations to communicate with leadership, scientists can easily share knowledge from wherever they are. "As you're presenting your findings, you can filter your data, plot your top formulations in Uncountable, and see exactly where the gaps are," says Carmean.

Carbon agrees that Uncountable is superior to the collection of disparate notebooks and spreadsheets they were using before. "I tell people it's a connected lab notebook on steroids," Carmean says of the platform. "All of our formulations are in one place, and we can create as many projects as we want—they're all connected," Poelma adds.

For Herring, there's exciting potential in Uncountable's predictive functionality. "The connected data storage, the way they use ML, it really opens people's minds. I think it will change the way scientists think about their work in the future."

For more details contact us at: info@uncountable.com