How Nanotech Materials Can Support Net Zero Buildings with Nathan Kegel | Transcript

00:02
Speaker 1
Welcome to Green Building Matters, the original and most popular podcast focused on the green building movement. Your host is Charlie Cicchetti, one of the most credentialed experts in the green building industry and one of the few to be honored as a lead fellow. Each week, Charlie welcomes a green building professional from around the globe to share their war stories, career advice, and unique insight into how sustainability is shaping the built environment. So settle in, grab a fresh cup of coffee, and get ready to find out why. Green building. Green Building Matters.

00:33
Speaker 2
Hey, everybody. Welcome to the next episode of the Green Building Matters podcast. Every week I get a interview someone about their green building career. And today we've got Nathan with us. He's coming to us from the Twin Cities there. Nathan, how you doing today, man?

00:46
Speaker 3
I am hanging in there. It's a lovely fall day here in the Minneapolis area. How are you?

00:51
Speaker 2
Yeah, yeah, I'm in Atlanta. Sun is shining, I think, finally summer ended and. And yeah, it's finally decent temperatures outside. So, you know, Georgia, we get all four seasons usually, so. So we'll see how that goes this year. But, you know, I've got some colleagues up your way in Minneapolis. Long time ago, I worked for Opus. I went to Minnetonka, so I know my way around a little bit. You're your neck of the woods. But so for our Park House listeners, because you got a fascinating career here. Just take us back, though. Take us back. Nathan. Hey, where'd you grow up and go to school?

01:21
Speaker 4
Sure.

01:22
Speaker 3
So I was born outside of. Born and raised outside of Green Bay, Wisconsin. So first question I usually get there is in my power. And the answer to that question is yes. In spite of their current failings recently, I still consider myself a package. So I'm not a bandwagoner, as it were. Long time. But I went to school at the University of Minnesota. Spent, obviously, I still live in Minnesota, so I spent. I graduated from the University of Minnesota. Oh, man. I'm not going to say what year, but it was a while ago and spent some time working in design with H Vac, designing for mechanical systems, et cetera, mechanical plumbing systems of buildings.

02:03
Speaker 3
And really learned a lot and grateful for the experiences there because I think a lot of that helped me transition into something that I found just a bit more interesting, which was the energy simulation side of the world. So working with the more dynamic interactions, the complex interactions of heat transfer, et cetera, within buildings, not just so focused on the design day as a design hour, as it were, certainly a very important thing to understand, but I just kind of naturally found that I liked the complexity and the challenges of learning how every building is unique at that level. So that's kind of how I migrated into what has become my career, which has been in the energy simulation space and building performance space.

02:48
Speaker 2

Oh, I love that. I know a lot about GBES. And then we want to talk materials in a minute, but a little bit more of how this career came together. So when did sustainability kind of first start showing up for you?

03:00
Speaker 3
I don't think there was like a, an aha moment for me. I grew up and living out in the country basically, so I was always. And I was the kid, you know, I, My parents always had a huge garden. Both my parents grew up on farms, so I was always outdoors. You know, my neighborhood kids thought it was Peruvian, usually in the summertime because I was, you know, half naked, running around, just doing things all the time. I grew up working on a neighbor's farm, so sweet corn farm. So I grew up helping. I was at that time in his late 70s. He had a couple of bad knees and bad hips. So it was just kind of what you did as a kid. So for me it was always I was immersed in nature, so to speak. You know, wintertime, summertime.

03:43
Speaker 3
You know, our. Our four seasons are a little different than Atlanta's four seasons. You know, most of the time I'm out playing in the snow in the wintertime, but spent. I just spent a lot of time outdoors and really appreciated what I had. And as I got older and moved into a more urban environment, you know. You know, Green Bay is a pretty small town by city standards. Certainly the Minneapolis area is many times larger than that. You know, I've taken a lot of the things with me and I still have a garden, although it's not anywhere near the size of my parents garden. I mean, we had everything in that garden growing up, you know, everything from pumpkins and squash to green beans and asparagus and tomatoes and peppers of all different kinds, potatoes, strawberries, raspberry. You can go on and on.

04:25
Speaker 3
But that's how I learned, was just immersed in that and understanding how things grew, the cycles of the seasonality to it all, and a very rudimentary understanding of how you have to nurture and nourish the soil and everything else that goes along with that. So for me it wasn't, it was just kind of a natural progression for me to be involved in wanting to sustain that for future generations.

04:53
Speaker 2
And yeah, I could tell you lit up there, the farming, helping the neighbor and just literally some roots and you know, I think a lot of folks that haven't been to Minnesota and even up towards Wisconsin, there's a ton of farms too. Right. So that's great. Okay, so let's kind of take that and talk mentors next. Right? So, Nathan, for some people mentor someone, you read their material, you see them from stage, they influence you. For some, it's someone that, you know, you meet with and they challenge you. Maybe they open doors. Have you had any mentors along the way?

05:24
Speaker 3
I've had a whole lot of them. I think some of them would be. Some of them know me and some of them don't know me. Some of them, I think, like my growing up, my first mentor was probably my dad in a lot of ways, got a lot of exposure to machine design. You know, he had a machine shop in a business that he built doing high speed thermal laminating systems. And I got that, had the opportunity as a very young kid to see how that process worked, how things went together, doing some of the basic calculations around, you know, heat transfer, et cetera at a young age. So I'm very grateful for that and certainly learned a lot from that aspect as I got older.

06:03
Speaker 3
Certainly I've had a good number of people that I look up to within the, we'll call it the green building movement, for lack of a better way to put it. There's, you know, Ken all over at Gensler was one of them. Kim Shin at TLC Engineering is another one of them. Like there's too many really for me to list here. But I look at mentorship, it's not just such as people who are more senior. I also take a lot of pride in learning from people that are more junior than me. Their perspectives have provided me with a recess in a lot of ways to think about a problem differently. Just because, you know, we've done something a certain way and it's worked, doesn't mean that a completely different way can't better.

06:45

Speaker 3
So I've tried to always be grounded in that curiosity of I don't know what I don't know. And I don't want to presume that just because I haven't heard of this before, I want to discount it automatically. So mentorship for me is very broad and I really love to engage with a lot of different people a lot of walks of life from that front.

07:06
Speaker 2
I love that. I like your take on that. Okay, so then there's one more look back. Accomplishments. Hey, what's on the highlight reel? What are some of your proudest accomplishments?

07:16
Speaker 3
Oh, man, I don't like to talk about myself. I'm from the Midwest.

07:22
Speaker 2
Okay. To brag a little. I don't know what certain achievements, what stands out.

07:28
Speaker 3
Yeah, I think being involved in some of the early, like net zero projects, like, you know, this is 20 plus odd years ago. Being, being involved in that, being with some of like the projects out in California that I did back in the early 2000s, some of the net first, like Lead Platinum Labs, Net Zero Labs is a part of those was really cool. I think the success of growing successful building performance teams at architecture and engineering firms is something I'm really proud of. And more recently, just the ability to have a lot of success with helping companies grow that are in this space. So when you mentioned GBES certainly was very grateful to have the opportunity to contribute there, but had a lot of success with working with people.

08:11
Speaker 3
And I like to think it's not just the success of the commercial side of that equation, but I also like look around and see the number of people that have learned GBES and because they've learned it, they've become better at something that they already do. And I think for me, like that's the most important thing is not just the plaques on the wall or what have you, but the skill sets and the development of all of the people so that you can exponentially grow the expertise of the industry so that you can address the challenges at scale. I think that's a fundamental thing. So that's probably the thing I'm most proud of. It is just the number of people that I've gotten to work with who have. Have told me they've appreciated working with me. I think that's the most.

08:56
Speaker 3
That's the best recognition I could ask for.

08:58
Speaker 2
That's a great achievement. Okay, I love that. Let's get Segue to connect the dots on career. In a minute, we'll talk about your new role at Nanotech Materials. But I asked, right? You were there on and off, maybe 10 years total, a couple great engineering and architecture firms in between. So just kind of connect the dots there. And for those that don't know about high performance buildings, you know, you need to model them out and talk a little more about some of that software that you help get out in the world.

09:24
Speaker 3
Yeah. So software is one side of it. And I think I'll go back to. If you're. I guess. Let me reframe this. I Think the best way to look at this is a craft like architecture is. I view architecture in the same way. The practice of architecture is a craft, the practice of engineering is a craft. You hone your craft and you use tools in your craft. And you, when you master sort of the knowledge and the know how coupled with some really powerful tools, that's where you're sort of a master craftsperson is kind of how I kind of my take on that.

09:56
Speaker 3

So in the time that I worked at, you know, at small engineering firms, ADs, IEs and AES again and then back into software and now nanotech, I've always taken the perspective of I've helped people get better at what they want to do. And the flip side of that is they didn't know it, but they were helping me get better at what I was as well. So I think that's kind of the common thread there is the continuous learning for everybody that's involved in that journey. And I think it's fair to say that These tools like IES are very sophisticated. Energy plus and GoAndre. I don't want to just single out IES. They're all very sophisticated and they all have a learning curve to them. And I think what gets lost in the struggle of the learning curve sometimes is that's what learning is.

10:45
Speaker 3
If it were, if learning were easy, well, then we wouldn't have to really learn in many ways. Like, it's not just about how easy something is to do. It's, it's what's the value that you're getting from the effort that you're putting into it. And so I think like, the more sophisticated the things that you want to learn, whether it's a software tool, whether it's, you know, something like, you know, how to be a better podcast interviewer, it doesn't matter. The more you sort of hone that craft, the more you practice it, the better you're going to inherently be at it. And, and that's just, I guess, kind of my underlying philosophy or for all of that.

11:17
Speaker 3
But I went back to practice because I missed sort of the prod, the direct project engagement, and I had some opportunities to help build some teams that I wouldn't have had otherwise. So I'm grateful for the detour, if you will. But coming back to IAS and then, and nanotech has been really exciting as well. I'll talk, I'll shut up now, and we can move on to nanotech when you're ready.

11:40
Speaker 2
No, I. We used to have a Green building consulting and engineering firm sig. We also helped a lot of people pass their lean exams all around the world@gbs.com and over here at our consulting and engineering firm we did a lot of energy models and sure, a lot of lead compliance. But one developer, Heinz out of Houston, Texas challenged us several years ago and said, hey, if you want to earn our energy modeling business, you're going to use iei. So that was definitely a wake up call. And one of the leading developers in the world said this is how we want our models done. So totally just have connected with the IS team. Respect the sustainability side, not just operating carbon, moving to body carbon and the skin of the building. It's fascinating to see where things are going.

12:22
Speaker 2
So, okay, so yeah, let's talk present day. So let's talk about nanotech materials and what's keeping you busy today.

12:29
Speaker 3
Yeah, nanotech's a really fun place to be. People ask me, but I've been asked about this now since I changed, you know, Antigone, and my response has always been the same. I'm having more fun in my career than I've ever had at this position.

12:40
Speaker 2
Cool.

12:41
Speaker 3
A natural fit. So I'll just kind of give the brief. Nanotech is a material science company. It was founded several years ago coupled as basically out of their garage. They've got a bunch of patents around a silica based nanoparticle. Well, technically it's not nano, it's 10 microns. So it's just a bit bigger. But what's a couple of microns between friends, right? The cool thing about it is you can embed it in other sort of carrier materials. So you can put it in acrylics, you can put it in epoxies, it's not a standalone thing. And from all of that work, when you put it in say like a roof coating, the particle itself will become part of that element. It won't change the characteristics in terms of it doesn't change its structural integrity, it doesn't change any of those bits.

13:27
Speaker 3
But what it does do is the particle gives it a super low K value. So K value is the constant that is used to help derive the R value. In fact, R value, I like to half joke, is like the bane of my existence these days. Because we don't need thickness to achieve thermal conductivity or thermal resistance. But R value has the thickness number in it when you calculate it. So just as an example, you can put 1 millimeter of this nano, you can put the nanoparticle into a material like a roof coating. And you can put that on a roof at 1 millimeter of thickness and it'll essentially stop the conduction through the roof. So the K value is on par with an aerogel, but it's not brittle like an aerogel. So the roof product can withstand 200 mile an hour impacts.

14:12
Speaker 3
It's rated like for the state of Florida. So it's a very durable super heat resistor and also very fire resistant. So we've also got a line that we've worked in the state of California to develop a spray on coating. It goes on timber infrastructure to prevent it from burning in wildfires. And it does not have any nasty chemicals that it gives off very low smoke, very low flame. It's like fire resistant to like 1800 degrees Celsius. So it's a really cool innovation in this space. And then there's another one that you can put on pipes. So you can not have to use aluminum jacketed piping systems.

14:53
Speaker 3
You can basically coat a couple of millimeters on pipes and stop the heat transfer and have a greatly reduced cost from a labor perspective and also almost nearly prevent corrosion under insulation because it's adhered directly to the metal. So all of that is really interesting. I think it is. But how does it end up with a company like nanotech with an energy services practice, which is what they hired me to do. So I don't, I know the product to that level. Don't ask me too many more detailed questions about it. That's not my area of expertise. But the reason I'm at Nanotech and doing energy services is because one of the co founders is also, I'm going to call him an absolute genius when it comes to software architecture and programming and to solve for his own problem.

15:38
Speaker 3
So when you're a startup and you're trying to get your product into market, you probably know this and I'm sure some people listening to this will appreciate this as well. You can't do endless pilots, right? Like if you're gonna, you can't put your coating on a roof and then wait a year and find out if it worked or not. Because you might not be in business a year. So the problem he was solving was, isn't there a way where we can stop doing endless pilots? So he created his own physics engine. And why didn't he go with the physics engines that were out there?

16:09
Speaker 3
Well, there's a whole lot of reasons for them, not the least of which is the code is old and there's better There's a lot of advancements in software architecture that can be made to make things a lot faster and more actually more robust on the physics side of things as well. So this physics engine went through the ASHRAE140 validation process that it's fully validated for that. And we're doing. I'm helping to get this new simulation engine into the market. So we're launching at green build on October 20th.

16:36
Speaker 2
Cool.

16:37
Speaker 3
And we are going to have services around that for now and then the intent is eventually we'll see where it goes, but we hope to be able to bring the full platform to those who might want to use it on their projects as well. So it's quite an exciting thing. I really, I've always wanted to be sort of somebody that could like get something new that's totally brand new off the ground. I mean, early days of IES is very much a startup kind of for North America, but this is like, you know, very, very startup, very on the cutting edge. So this is just something I've wanted to do in my career for a long time. So this is my opportunity.

17:15
Speaker 2
Good for you. I can tell you're lit up about it. Sounds like you got a great founding team there too, with some previous experience. I was checking out some of their backgrounds and funding and let's go for Green Build. Yeah, that's coming up right around the corner. I'll be there. So let's make sure we hang out. I'll come by if you got a booth and support your announcement. That's exciting. Nathan.

17:34
Speaker 3
We do have a booth.

17:35
Speaker 2
Good, confirmed. We'll send people there. All right. So that's what you're doing now, this energy services side of nanotech materials. Yeah. I could ask questions about how do you prove it out, this or that. The materials, is it eco friendly. But it just seems like there is this big need and sometimes you do have to put some math behind it. Maybe there's even some incentives. I did a lot of work in New York City with nice Serra to money. So who knows where you could go with all this, you know?

18:05
Speaker 4
Hey, quick question. You spent months, maybe years earning LEED certification, so why are you still hanging a generic plaque on the wall? With buildingplaques.com you can showcase what actually made your project achieve lead, highlight your scorecard, your design strategy, your team, architects, engineers, contractors, owners, all in one clean, modern display. Their plaques are fully customizable in minutes, built with durable architectural grade materials and arrive ready to install. This isn't just a plaque It's a storytelling tool for your building. If you're proud of the work, show the work, go to buildingplaques.com and design yours today.

18:49
Speaker 2
Okay, what about what's next? Normally I ask my podcast guests, hey, what's next? Who knows, they might talk nanotechnology, but what else do you see coming that's going to help us in this green building movement?

19:00
Speaker 3
Yeah, I think there's a lot of things, I think there is a lot more with not just what the nanotech materials that obviously we've developed or are developing, but I think there's a lot more stuff on that end. You know, they, the environmental sort of impact of things is always also front of mind. And, and you know, the thing with a particle like this to kind of answer your, your, the tale of your other thought before this question is, well, it's whatever you put it in, that's the driver. Like the particle isn't inherently anything. It's just, you know, if I'm putting it into something that's toxic, it's still going to be toxic. If I'm putting it into something that's non toxic, it's still going to be non toxic. It's just a carrier for the particle to sort of live in, if you will.

19:43
Speaker 3
The other, the other piece of like, what's next? For me, like, I think there's a lot of exciting stuff with just emerging technologies and certainly I guess for me is I hear the question framed in a way that I don't really like to frame questions. And the question gets framed like something to the effect of what does building design look like in 2030? And to me that framing is, well, we're all just going to sit around and wait for it to happen and then whatever happens, we'll just react to. I much would prefer that we put the frame of what do we want it to look like? And then let's work towards that. And that's a harder question in some ways to think about or to ponder. But it comes from my modeling background.

20:25
Speaker 3
We would always say, whenever I would teach somebody about simulation is you start with the end in mind, then you figure out what you got to do to get there. And so it's the same framing of if we want AEC to be people driven, do we want it to be AI driven? Do we want it to be some combination thereof, where do those lines sort of land? And then let's write code, standards, laws, whatever we need to make that framing happen. And I Think

it's really an imperative time for us to be thinking about this because, you know, you may have seen the announcement a few weeks ago that, you know, like, you know, AI can basically quote, unquote solved, you know, Navier Stokes equations all didn't actually solve them. But just for the sake of discussion, we'll frame it that way.

21:05
Speaker 3
And if it can do that, it can probably pass the ares, it can probably pass the pe. So if you have this thing that doesn't make mistakes, or at least allegedly doesn't make mistakes and it can pass these exams and it can do things faster, well, what's the point of having professionals any longer and not just relying on sort of this quote unquote super intelligence. So if that's where we're at and things are getting better, I hear this all the time and I can say this being closer to it than I've ever been to in my career is today is the worst AI is going to be in terms of its functionality. It's only going to get better.

21:47
Speaker 3
So if we're already like, Navier Stokes is like being like Millennium Prizes are being knocked off by this, what else is it going to be able to knock off? I think that's a legitimate question to ask. So the framing I would take to that is. And I would challenge the industry, not just aec, but any industry that you're in for anybody who's listening to this is what do you want it to be? And then build the framework around that to achieve that goal rather than frame it of, well, I don't know what it's going to be. So let's just wait and see.

22:14
Speaker 2
Man, I love it. I'm a fan of technology. I'm a fan of AI right now. I co founded a tech startup. It's an AI tool for architects, real estate developers and even direct owners. Right. So I'm hearing what you're saying and I think you can all help us with how we improve our buildings, improve our building performance and decarbonization too. So that's good stuff that is upon us. Okay, so that's the future. Nathan, let's shift over a little bit and talk about you. This is kind of the rapid fire part of our interview. What would you say is your specialty or gift?

22:47
Speaker 3
I'd love to read, believe it or not, but I think I. I think what I've been told is my ability to communicate complex topics simply. And I don't know if I always believe that, but that's what I've been told. So I'M going to just go with that. Okay.

23:02
Speaker 2
I mean, do you break it down and don't talk too fast, don't use big words or. For someone that's not good at that, any tips on how they could get better at that?

23:11
Speaker 3
Yeah, it's practice. It really is not. I tried to avoid jargon. It's the biggest one, like realizing and being aware of what your own jargon is and how somebody does simulation work. You can very easily get into weeds of technical jargon, and there's a time and a place for that with the right audience. Don't get me wrong, but I think the best frame is always know who your audience is and then bring it to their level or whatever you're trying to communicate.

23:35
Speaker 2
Okay, well, thanks for those tips. Let's get it. So as we get to know each other more, I'm a big fan of the bucket list, and we're going to go to that, and then we're also going to unpack some habits and routines.

23:47
Speaker 4
So.

23:48
Speaker 2

So let's go. Let's actually do habits and routines first. So do you have any good habits, routines, rituals that help you stay on point?

23:55
Speaker 3
Yeah. I always take time to just think, isolate myself from my devices, my screens, whether that's with a book or sometimes I'll just go on a walk, be outside. But I always take time to think. I mentioned I love to read, and my reading library is extensive and vast and a lot of different topics. History, philosophy, the classics, certainly technical things having to do with standards and those sorts of things, too. But I like to try and think about how things that seemingly are unrelated on their surface, how do they actually connect and what is their actual impact, or trying to see what their impact could be maybe is a better way to frame that.

24:33
Speaker 3
But for me, my habit is I. I always take at least an hour out of the day to just give myself the chance to read and ponder, slow myself down.

24:43
Speaker 2
Man, what a great practice. We don't do enough of that. I. I think it's so important. I'm glad you do that. And let's get stuff. Okay, so now let's go to Bucket List for some of my podcast guests. You know, it's travel, adventure, read a book. I don't know what's on the bucket list.

24:59
Speaker 3
Bucket list for me is a remote cabin where I can have a garden and be lost in nature, be away from the world whenever I need to be. That's my bucket list. Certainly love the travel. Have done a lot of that and there will be more travel in my future. But ultimately, my goal is to be as slow and present as I possibly can be. You know, I'm of a certain age now where I realize I'm closer to the end than I was the beginning. So that, for me, is having that chance to slow down is. Is having that ability to be slow and intentional wet more than at a pace of one hour a day is. Is. Is my aspiration.

25:39
Speaker 2
No kidding. All right. Reading and thinking up there at that cabin and connecting with nature.

25:44
Speaker 3
Well, I'll do some fishing, too. I'll do some fishing.

25:50
Speaker 2
The world's a big place. You've traveled, you're going to go more.

25:52
Speaker 4
Is there.

25:52
Speaker 2
Is there a certain place, though, you want to go to or you want to revisit? How about one destination?

25:57
Speaker 3
For me, it's Africa. I've been a couple of times. I've been very fortunate. Been on safari, hiked with the gorillas and Uganda. But it's. It's going back to Africa to see more of the history of that place. There's just so much, you know, there's wildlife, etc. But I think the only way to remember, like, as far as we know, you know, Homo sapiens evolved out of Africa. So if you. If you really want to, like, sort of. To me at least, if you really want to sort of connect with that on a more visceral level, perhaps being immersed in that is something that I always treasured and would love to do.

26:33
Speaker 2
Again, and that is really cool. Holy cow. Okay, just a few more things here. Is there a book you'd recommend to our listeners? It doesn't have to be about buildings. If not a book, maybe a documentary or a podcast.

26:46
Speaker 3
This is a good podcast. There you go.

26:51
Speaker 2
A new raving fan. I love it. Make sure you subscribe on itunes. Okay, good. Yeah, I don't know you like to read, so I'm gonna. Do you ever do audible or do, you know, you like a physical book? And is there something I recommend?

27:05
Speaker 3
I much prefer the physical books. And like I said, I read a lot. I think for me, one of the defining books, and I definitely might be overstating it, but whenever somebody asks me this, I think the book Thinking in Systems by the late Donnella Meadows is just a fantastic way to get introduced to how to think about how the world interacts. It's not this simple. X equal X plus Y equals Z equation. It's much more complex than that. And I think one of her gifts as an author is that ability to communicate. Communicate something that's very complex. Into a very elegant prose and a pretty small book to get through. It's not a massive tone by any stretch of the imagination, but I think, like, for me, that was a. A great way to sort of condense like mathematics and like.

27:50
Speaker 3
Like the sort of the complexity of equations and distill it down into something that isn't so technical but is yet also profound. So that's. That's where I'd start.

27:59
Speaker 2
Okay, we'll put a link there in the show notes. Thank you for that recommendation. Our last two things. Let's say we're looking back on your career. Is there anything you wish you'd have learned earlier or some career advice you wish someone told you earlier?

28:12
Speaker 3
Oh, boy. That's that. That starts for me. You may unpack, like the philosophical question of are we thinking or are we being thought? Like, I tend not to think about, you know, what. I'm sure there are, but on the day to day, I can't think of anything that comes to mind. But there's things that I wish I would have learned. Yeah. Yesterday that I know today type of a thing. But I guess, like, that for me would cause me a lot of anxiety if I really dwelled on, well, why did I miss that? And it would be something that would kind of wreck me. So the framing I try to take with that is I learned it when I needed to learn it and not before.

28:47
Speaker 3
And whether that's true or not, we could debate this endlessly, but it brings peace to the fact that, well, I made the mistake because I didn't know that. So let's learn from the mistake and accept. And there's no way I was ever going to learn that prior to that event happening or that thing happening. So it's just a little bit of a reframe for me on. Yeah, there's things that are. That are out there. I can't. Again, can't think of one that exists. But I've always taken that tact of be upset about it, learn from it and move forward and. And take that learning with you, man.

29:18
Speaker 2
That's good stuff. Okay, last thing. I'm really enjoying our conversation. Let's say someone's listening. They're getting excited. They're just jumping into the green building movement. It's been good to you. It's been good to

me. I know you're excited about this next chapter and season. Any words of encouragement, Nathan, for someone that's just jumping in as we come.

29:38
Speaker 3
To a close, Never stop learning. Just never, always assume you did that. There's something that you don't know because the reality is there is. And if you're curious about something, never stop picking at it until you're satisfied. And whether that's, you know, simulation and nanotech materials or whatever it is in the space, if you really want to make the world a better place, define what that better place looks like and then work toward it and you will be rewarded. I think that's been just how I've approached this, and that's how I that's where I come to give credit for my success. It's all the people that have been there with me along the way, whether they were aware of it or not. But it's also me just knowing this is the direction I want to go.

30:19
Speaker 3
And yes, there's going to be setbacks, but just being relentless in that pursuit of learning more and more.

30:28
Speaker 2
That's fantastic. All right, well, I've enjoyed getting to know you. I'm excited to see you at Green Build. You didn't know this about the podcast, 450 interviews and the motto of our podcast is teach everything you know. So I think that's the second part of continue to learn, be coachable, but then make sure you teach others. So I have an organic cotton T shirt says teach everything you know Green Building Matters podcast. So I'll get your T shirt size, I'll bring it to New York and look forward to hanging out, man. So hey, best of luck with what you're building and just want to say thanks for being on the podcast. For those listening when this comes out, make sure you connect with Nathan on LinkedIn and keep an eye on everything nanotech is doing.

31:09
Speaker 2
This is gonna be a great next chapter for you guys. Thank you.

31:12
Speaker 3
Thanks Charlie. Look forward to wearing that T shirt with pride.

31:16
Speaker 4
Thank you for listening to this episode of the Green Building matters podcast@gbes.com Our middle mission is to advance the Green Building movement through best in class education and encouragement. Remember, you can go to gbes.com podcast for any notes and links that we mentioned in today's episode and you can actually see the other episodes that have already been recorded with our amazing guests. Please tell your friends about this podcast, tell your colleagues, and if you really enjoyed it, leave a positive review on itunes. Thank you so much and we'll see you on next week's episode.

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