



## meet a member

### Guitar Collecting Strikes a Chord for Alex King

Lynne Robinson

There is a lot more to Alex King's guitar collection than meets the ear.

King, Director of the Critical Materials Institute at the Ames Laboratory and Bergdahl Professor of Materials Science at Iowa State University, has played guitar for his own enjoyment since buying his first "serious" instrument in college. When he happened upon a second-hand plexiglass bodied guitar in 2005, he picked up a fascination with the stuff that guitars are made of, as well as the sound they make—and the relationship between the two.

King now owns about 20 guitars, nearly all of them made from non-traditional materials. In addition to the plexiglass instrument that started it all, there is a Bakelite electric guitar from

the 1940s and an injection-molded polystyrene acoustic guitar made by the same luthier who supplied jazz guitar legend Django Reinhardt with some of his earlier instruments. Metal, carbon fiber composites, fiberglass, and Masonite feature in other pieces of King's collection.

"Basically, you can make a guitar out of just about anything, but the choices do have some impact," said King. "Guitar makers have often used new materials soon after they have become available,



Alex King surrounded by his guitars. (Photo courtesy of Ames Laboratory.)



This Travis Bean TB1000S in King's collection, with an aluminum neck, was made in 1971 and is one of only about 1,422 that have ever existed. "The necks were machined from 6061-T6 aluminum, extended the full length of the strings, and also housed the pick-ups," said King. "They never, ever, warped, but were somewhat over-designed, very heavy, and ill-balanced for playing on a strap. Bean claimed that he made a loss on every one that he sold, but despite its problems, this guitar still sounds great. This is partly because the pickups are set into the instrument's aluminum core, protecting them from stray fields so they are virtually immune from 'mains hum.' This occurs when pickups are sensitive to the electric fields of lights and other electrical equipment."

so there is always a bit of a sense of experimentation with these instruments. Not all of the experiments worked out. But, one that did work well was the use of Masonite by Danelectro, which made Silvertone-branded electric guitars for Sears. Masonite has zero acoustic qualities, and was chosen simply to make the guitar as cheap as possible, but somehow these things came out sounding great. Lots of famous people have played them.”

Unconventional materials selections have also been used to address common structural or performance issues in guitars, sometimes with mixed results. “Metal necks appeared on a few guitars as a way to avoid neck warpage,” said King. “It’s a pretty good solution, except that the neck can get very heavy and the guitar is often unbalanced if you play it standing up, using a strap.”

While King describes himself as a “basement musician,” he occasionally takes his knowledge of materials and music on the road to student groups and audiences at the Science Center of Iowa. “There are a lot of people who like guitars,” he said. “Talking about my collection lets me introduce a few of them to a little bit of materials science and how science, engineering, and the arts all interact.”

King is still on the hunt to add a few elusive guitars to his stable of instruments. “I’m looking for a Rickenbacher ‘frying pan’ guitar—the first electric production guitar—made out of cast aluminum, and very rare indeed,” he said. “But, it’s always



King’s 1969 Ampeg Dan Armstrong guitar with a plexiglass body is one of about 1,400 ever made. “This guitar has some other innovative features, such as an interchangeable pick-up, but the see-through body material was chosen for only one reason—it was cool,” said King. “The guitar has a few problems, including being a little heavy, and generating static electricity when it rubs against the player’s clothing. This causes some disturbing crackling noises from time to time.”

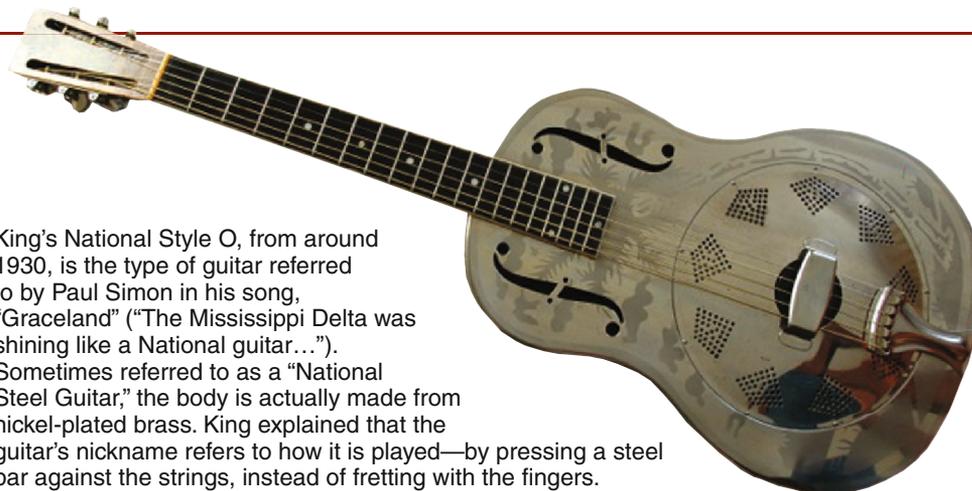
fun to discover an instrument that you haven’t seen before.” He notes that he’s made a few friends who share his interests along the way. “There’s an odd sort of fraternity among guitar collectors,” he said.

All of King’s guitars come off display to get played from time to time, with King saying that his favorites “are the ones that are easy to play.” His musical tastes range from rock to jazz to English folk and beyond, and he tries to see guitarists perform live as much as possible. “I basically admire anyone who plays better than me, which is a whole lot of people,” he said. “But, I still enjoy listening to guitarists, and playing guitars, too.”

Especially that very cool plexiglass one.



This photo shows the headstock of King’s Rickenbacher B6 Electro, dating back to the 1940s. King noted that it is one of the earliest electric guitars to go into production, and the body and neck are made entirely from Bakelite, considered a high-tech material at the time. “Despite the fairly early stage of development, this guitar has a truly classic electric guitar tone, and it probably helped to set the standard for all electric guitars to follow,” said King. “It is a ‘lap steel’ guitar, intended to be played resting on your lap, using a steel bar to press the strings. And it weighs a ton!”



King’s National Style O, from around 1930, is the type of guitar referred to by Paul Simon in his song, “Graceland” (“The Mississippi Delta was shining like a National guitar...”). Sometimes referred to as a “National Steel Guitar,” the body is actually made from nickel-plated brass. King explained that the guitar’s nickname refers to how it is played—by pressing a steel bar against the strings, instead of fretting with the fingers.

Each month, *JOM* profiles a TMS member with a particular hobby, interest or experience to share. To suggest a candidate for this feature, contact Lynne Robinson at [lrobinson@tms.org](mailto:lrobinson@tms.org).