

## How to Mic a Sitar – A few Notes from the Field

There are basically 3 main ways to mic a sitar: using a condenser microphone, a dynamic microphone, or a transducer. The short answer is: use a condenser mic for studio recording, a dynamic mic for live performing, and a transducer when playing with a band or other instruments to avoid feedback.

In the case of a condenser or dynamic microphone, the mic should be placed about 6 inches from the player's right hand. If you're using transducers, placement is largely down to trial and error, but fixing it under the bridge usually works well.

For a microphone, it is recommended to angle the mic at 45 degrees across the bridge and tabli, towards the pick-guard. This allows you pick up the sound of the mizrab on the string, resonance from the soundboard, and shimmer of the sympathetic strings. If you are doing a studio recording and are using a good quality condenser mic, you could try moving it further from the sitar. A foot to a foot and a half away can often produce a beautiful spacious sound.

Condenser microphones require a small electrical charge and produce a very high quality sound. Because they are so sensitive, they are also prone to feedback, so they are better suited to studio recording than live performing. However, a carefully adjusted and placed condenser microphone can be used for a live performance. And, because it is so sensitive, the microphone can be placed further from the sitar than a dynamic microphone. This is important, as so much of the sitar's sound is dependent on the acoustic space around the instrument; the more of that acoustic space that is captured, the richer the amplified sound of the instrument will be.

Because of the feedback problems associated with condenser mics, dynamic mics are the preferred choice for live performing. Unlike condenser microphones, dynamic mics are not powered, so they're quieter. But because the sitar is not a loud instrument, a dynamic mic needs to be placed quite close to the instrument for enough volume to be captured, and this can sometimes be a problem if the sitar is competing with other louder instruments in a live performance setting.

The solution that a lot of sitarists employ for difficult-to-mic environments, such as playing with a band, is to use a *transducer* (also known as a *pickup*.)



(McIntyre HD-98 shown above)

Exactly where to place a transducer is an open question which only experimentation and careful listening can determine. Some sitarists fix them under the bridge. Others place them just below the sympathetic strings on the sitar's *tabli* (soundboard.) Transducers are fixed to the instrument with reusable sticky putty, which usually comes as part of the transducer package.

Transducers are immune to feedback and interference by other instruments, but, as a drawback, can pick up a lot of the vibration of the instrument, and over-amplify the sitar's drone strings (particularly the chikari strings) to create an imbalanced sound. Also, they capture a narrow and uneven spectrum of the sitar's tonal frequencies. This can result in a tinny or flat sound. However, in difficult-to-mic environments, such as a small stage in a nightclub, they may be the *only* way to amplify a sitar without feedback.

Transducers should *always* be routed through an *acoustic preamp*. A good acoustic preamp, such as the L.R Baggs Paracoustic DI, can completely transform the sound of the transducer, and produce a very acceptable sound, almost to the quality of a microphone. For live shows you may also want to add a *compressor*. A compressor evens out the difference in volume between loud and soft sounds. Carefully adjusting a compressor's settings gives the sitar a boost in presence, which helps it's sound compete well with the other electric instruments on the stage.

Finally, if you are performing sitar with a band, consider routing your transducer and preamp to a small on-stage amplifier, and then miking the amp. This will allow you monitor your sound, so you can hear it properly over other

instruments that might have amps on stage as well, such as electric guitars. Acoustic amplifiers, like the Laney A1, are ideal this, but certain valve guitar amps, like the Epiphone Valve Junior, produce stunning results.

Many sitarists use a combination of microphone and transducer for live performances. They use as much from the mic channel as possible without feedback, and then add the transducer channel to boost the volume. This is a good compromise.

The bottom line is, use a microphone wherever possible for the best natural sitar sound, but in very difficult-to-mic environments, such as when playing with other, loud instruments in a live environment, transducers are a good quick fix and often essential.

## **Recommended Microphones and Transducers**

The following microphones and transducers come highly recommended by professional sitar players and sound engineers who have had experience miking sitars:

### **Dynamic Microphones (for live performances):**

- Sennheiser MD421 (This works particularly well for sitar because, although being dynamic, it's "hot": sensitive to quiet sounds.)
- Electrovoice ND767

### **Condenser Microphones (for studio recording):**

- Rode NT 3 (This highly directional microphone is very feedback resistant and will work well in most live stage situations as well.)
- Rode NT 1000
- Neumann KM148

### **Transducers:**

- McIntyre HD-98 (This model was designed originally for a Hammered Dulcimer but happens to be perfect for the sitar. The McIntyre SBT-04 also gets rave reviews for use with sitar.)
- Schertler DYN-G (This is very expensive, but used by Ravi and Anoushka Shankar. Confusingly, Schertler's website recommends the M model for sitar, but in an email recommended the G model. The Shankars use an E model. Puzzled? I'm sure they're all good, and the internal architecture is probably very similar, if not identical.)
- Barcus Berry Insider

- AKG C411

### **Acoustic Preamps (required for transducers):**

- L.R Baggs Paracoustic DI

### **Compressors (extra body for transducers):**

- Keely Compressor (This has proven well in a sitar-transducer-preamp-amplifier setup on stage. It boosts the sitar's presence so that it competes well with electric instruments)

This is a lot of gear. How much of it do you really need? Ideally, one condenser mic, one dynamic, a transducer and a preamp. That will cover every sound situation that you're likely to find yourself in.

However, this can become very expensive very quickly. You may want to consider starting with a Sennheiser MD421. It's a great general purpose mic that will stand you well for recording and is ideal for live performances. From there, consider purchasing a condenser mic if you're going to be doing a lot of studio recording, or a transducer and preamp if you do a lot of live performing.

On second thought, a possibly better, and certainly more inspired first purchase might be a Rode NT 3. It has unsurpassed brilliance, depth and clarity. And, because it is highly directional, it is very resistant to feedback on stage, making it a great performance microphone for classical performances with a tabla or with a small acoustic ensemble. You may struggle a bit with feedback problems at a loud rock or pop performance with other electric instruments on stage, but a transducer in your back pocket would cover you in those situations.

- Rex van der Spuy

## **From the Forums...**

Here are some thoughts from various online discussion forums:

About transducer's over microphones:

*I really don't like those transducers...Very ugly sounding....The thing is those transducers records the vibration of the instrument and you miss the acoustics of the environment you're sitting in. The last recording I made I combined one transducer with a mike, so I could blend both signals...In the final recording it was about 25% transducer and 75% mike... The transducers just didn't cut it*

*(even compared with a mediocre mike like a C1000). Also be sure to roll off some of the highs of the transducer. The highs usually make it very unnatural sounding.*

*I know several people who use these transducers live, because they want to avoid the hassle of setting up a mike, plus they are less sensitive to feedback, but sound wise mikes can't be beaten. Have you ever seen them being used in a recording? I doubt it.....*

*(by Remco, from the Netherlands.)*

What is the XY configuration that Remco refers to? It's a studio recording technique to produce a basic stereo effect. Here's what Wikipedia has to say on the subject:

*The X-Y technique involves the coincident placement of two directional (cardioid) microphones. When two directional microphones are placed coincidentally, typically at a 90+ degree angle to each other (typically with each microphone pointing to a side of the sound-stage), a stereo effect is achieved simply through intensity differences of the sound entering each microphone. Due to the lack of time-of-arrival stereo information, the stereo effect in X-Y recordings has less ambiance. The main advantage is that the signal is mono-compatible, i.e., the signal is suitable for playback on non-stereo devices such as AM radio. If two bi-directional (figure 8) microphones are used instead of cardioid microphones, this technique is known as a Blumlein pair.*

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*I work in music and prosound here in Tucson, so I get to try just about everything! I use a transducer for performing in a small room where I know the speakers are going to be close and feedback is going to be a problem. However, it is true, as several have said, that sound-wise a mic will always sound better than a transducer on a sitar. So these factors have to be weighed. Condensers sound great, have better harmonic pickup and clearer highs but will feedback very easily compared to dynamics (like Shure 57's and 58's). Dynamics need to be much closer to the instrument while condensers can be set back a bit. This is why you will often see dynamics used for concerts but recording studios almost always will use a condenser, where feedback and gain is not an issue.*

*XY is where you have the heads of the two mics almost touching but angled 90 degrees to each other. Very easy, simple stereo configuration. They must be back away from the instrument and again are better in a studio. Hope that clears some stuff up (Pencil mics are just very thin straight mics- nothing to do with sound description)."*

*(by Sitarman, from Tuscon.)*

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*I myself use TwinSoundspot XL Transducers by Seymour Duncan... they do the job quite well and dont take away too much of the acoustic feel. However, you may also need a pre-amp so that's something extra to think about (unless you have a guitar amp to plug into etc).*

[http://www.d-tar.com/ac\\_sitar.shtml](http://www.d-tar.com/ac_sitar.shtml)

*For the pre-amp (I highly suggest getting the one I use because it can sit right beside you and you have EQ/Volume etc at your fingertips which is needed)  
I use - L.R. Baggs paracoustic DI*

<http://www.acousticmusicshop.com/lookupItemByCategoryID.do?element=9>  
*(just scroll down, its 3rd from the bottom and has a pic)*

*If you think you only want to go the mic route. Keep in mind that even if you buy the best mic on the market... the sound will differ depending on what type of P/A system, speakers etc. you are using. If you have a \$1000 mic and put it through a \$50 p/a.. you will get a \$50 sound. So what Im trying to say is that... your p/a, speaker system is just as important to your sound as the mic would be and if you want to buy all of this equipment it is going to cost \$1000+. ?*

*If you plan on using it for a concert/live playing... I would go with the Transducer/Pre-amp combo because you can EQ your sound yourself without having to battle it out with a sound man. As well, you can adjust your volume for dynamics which is not an easy thing to do if your Sitar is mic'd as you only options are to play softer or move back from the mic. As well, if you are mic'd and there are other instruments around you... your sound may suffer or not even pick up at all. If its just you and a tabla player no worries.. but, if you have a full band with loud instruments it wont work very well unless you create some type of sound chamber for yourself.*

*If you plan recording.. than you can just go and rent the best mic from the music store if the recording studio doesn't have one for you (which they should).*

*(By Drew, from Toronto)*

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Here's Mike T's experience with a very complicated live recording setup:

*The last group I worked with that featured tabla, sitar & harmonium were the accompanists for a traditional Indian Kathak dancer. They*

*were first-rate players, knew their stuff, and knew what they wanted. They also did not want much in their monitors, because they understood the drawbacks to that.*

*I used a single C451EB over the tablas, another C451EB, not too close, on the sitar, and an SM57 on the harmonium. If I had more small-diaphragm condensers, I would have used them.*

*I used two PZM at the downstage edge of the dance floor to pick up the dancer's feet and ankle bells. He did percussion duets and traded licks with the tabla player, who led the accompanists.*

*The musicians sat on a low, carpeted riser downstage right, facing the dancer downstage centre.*

*With your microphone kit, here's what I would do:  
AT4050, cardioid, on the tabla. Not too close. Adjust position for balance between the two drums.*

*KM184 on the sitar, aimed at the face plate of the resonator, below the player's right hand.*

*If the sitar has a second resonant gourd on the neck, you might aim an SM57 at it and used about 6 dB less of this than of the KM184 on the main resonator.*

*The harmonium is easy. Mic from above, SM57. Back off enough to get the whole instrument. Adjust balance between bass and treble by moving the SM57. The mid range will be emphasized, but that's OK. Use two SM57 if you must get them in close to the instrument, but it's better to use one mic at a greater distance ... unless they insist on loud monitors.*

*IF you have a Kathak dancer (and I don't know much about Turkish music), the foot percussion is very important. It will be the fourth instrument. I would suggest two SM57 on very short stands, downstage L & R, pointed at the dancer's feet. I panned them slightly L & R in our house PA, and it gave the audience a nice sense of the dancer's movement.*

*(By Mike T.)*

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A few more general thoughts on miking a sitar:

*My best **Sitar** recordings have been made with a large condenser mic about 3' away from the lower bout/gourd of the instrument, used in conjunction with a small condenser mic about 2' away from the upper gourd. I think getting the proper distance away from the instrument is vital. I have also had interesting sounds from close use of a pair of small condensers.*

(By Dave Mathews)

*The hands down best recording of a **sitar** I've ever heard was done with 2 EAR mics in Blumlein and an EAR 824 - these recordings are actually how I got involved with EAR.*

*But you don't have those. I've also had good results with KM-54s and U-67s. But you don't have those. Your best bet is the C-12 and move it around until you find the best balance. The upper mid peak of Neumann is very complimentary to the sound of thin wood and gourds and sympathetic strings. But the more general rising top end of a C-12 can still be beautiful if you find the right spot. And I disagree with the omni idea. Position the guy right and fig 8 might be interesting, but your best bet is some cardioid variation to get more color out of the mic.*

(By Mgod)

*I use a pair of km 84's w/ spectacular results. So maybe you can borrow or rent, BUT.....if you cannot, then go with a pair of large condensers. You should orient them (no pun intended) near the bridge, near the body. In terms of the physics of the **sitar**, think of it a large carved top mandolin with a round back, and a lot of sympathetic strings. Be aware that this instrument uses VERY light strings in great profusion and is NOT very loud, so get a bit close, but not so close that you lose the sympathetic strings. 9 inches out to about 15 or so depending on the player and if the player moves around.*

(By Gallimhabu)

Hamlet'sghost has this to say about his experiences miking sitars:

**Sennheiser - Sennheiser - Sennheiser I**

I cannot stress it too many times -

**Sennheiser MD421**- DYNAMIC CARDIOD - Not a condensor - Placement - Fire it across - about a 45 degree angle across the bridge & tabli - towards the pic guard - you will have to wiggle a little back & forth to find your hot spot BUT this is by far the best position for your mic for any purpose - you will pick up everything you need even the slight metallic ping of the mizrab striking the

string. If you use a top gourd & you want the ultimate for recording, place a good directional cardioid mic of your choice about 1 foot behind your head facing the opening of the gourd - This will greatly enhance the zing on your recording.

This is also the ultimate for live micing as well as recording your shows.

More detailed directions:

- In a seated position place the mic in a short stand on the floor about even with the tailpiece and have the element of the mic about 2 to 3 inches south of the main bridge NOT close to but positioned so if you are facing the instrument the element appears 2 to 3 inches down from the bridge toward the tail. The element will split the face of the tabli top to bottom at approximately a 45 degree angle shooting across the face towards the pic guard & past the hot spot that's around the bridges. Distance in front - the element should be about 6 inches in front of the instrument - You will have to experiment to find the most comfortable position while maintaining maximum sound pressure level from the instrument. Too close & you might klunk the mic. Too far & you have to put too much gain at the attenuator on the board & thereby create distortion & the possibility of feedback from monitors as well as picking up unwanted sounds from other instruments.

An easy test to find the hot spot on your individual instrument is:

Lay on the floor while in front of your instrument and have someone else play. Have your head in an approximation of the mic position (your head is now the mic) cup your ears & listen to the sound of the sitar & you will be able to hear where the most prominent sound is coming from on the face of the tabli it will be somewhere around the bridges - this is the hot spot. You will also hear all the rich overtones that radiate from the bridges out thru the instrument & up thru the hollow neck - you are angling the mic position toward where the mizrabs are striking the strings and picking up the ambient tones generated from the metallic ping of the mizrab striking the string - this will help accentuate the perceived bite of the plucked string especially during loud fast sections where it might start getting a little blurred - This will help the fretted note explode & sound true above all the rest of the background overtones. (remember mic the top gourd if you're using one and have an extra channel your tarafs will just sparkle)

On an acoustic guitar it's the same principal except your hot spot is obviously the sound hole - You angle the mic from the neck side toward the pic striking the string past the hot spot for those stike sounds that adds bite, If you just fire straight into the sound hole it can get a little blurred again during forceful strumming, & you start to lose all those wonderful overtones radiating out thru the soundboard that add that wonderful clear woody sound we're trying to achieve.

By finding the hot spot on an instrument and also remembering to position in such a way to help accentuate the striking medium (bow - pic - mizrab - etc) It will give you a very clean, clear, & powerful sound with great penetration and will

give you tons more headroom on the channel at the board. It will also be a truer sound and you won't have to eq heavily thereby giving it a more natural sound. And remember these techniques are being used for acoustic only instruments - if you then add a transducer and have the luxury of having 2 channels available for the instrument it changes the dynamics of the sound at the speaker. I would still position the mics for sitar in the same way but it will change your settings for the miked channel vs the direct channel as you blend the 2 distinct sounds.  
Hope this helps.

(By Hamletsghost)