In November 1974, Lynda Benglis placed an advert for her next show in Artforum magazine. It appeared, Playboy-style, in the magazine’s centrefold: a photograph of the American artist herself, naked but for a pair of cat-eye sunglasses, some impressive tanlines, and an oversized dildo.

A storm ensued. Some artists admired Benglis, viewing the advert as both a powerful artistic statement and a denunciation of the male-dominated art scene. Cindy Sherman, then a young art student, has since said it was one of the pivotal moments of her own career; sculptor Larry Bell thanked Artforum for daring to print it. Others were less impressed. “Had her photo not appeared in Artforum but rather in a pornographic magazine,” read a letter from two prominent feminists, “it would have remained pornography and as indefensible as anything else.”

Now, almost 40 years on, that advert remains the work for which Benglis is best known – even though it is not particularly typical of the art she had produced before, nor of what she has made since. Working across a range of materials – from beeswax to rubber, from bronze to ceramics – Benglis creates abstract sculptures, a selection of which is now on show at the Thomas Dane gallery in London, in what is – astonishingly, given Benglis’s influence – her first retrospective in the UK.

I ask Benglis, who turns 71 this year, why it has taken so long for her to have a major solo show here. She grins impishly, leaning down to pat her dachshund, Pl, who accompanies her everywhere. “You’d better ask the galleries,” she says. “I don’t feel under-represented. I’ve had shows in Germany and Holland. I think perhaps in England they were not ready.”

Because of the advert? She nods. “But that has changed. Now they are ready. I have a big piece in the Tate.” This is Quateroon Meterec, a lead sculpture from 1973 that looks like layers of lava.

Behind us in the gallery, Benglis’s 1968 sculpture Night Sheeret A – a Day-Glo confection of pigmented rubber that was created, like many of her early works, by pouring out layers of polyurethane foam and allowing them to set – seems to ooze across the floor. The Artforum advert does appear in the show, as one of a number of images and film stills from the early 1970s, when Benglis was experimenting with photography and video. Several of these works – including the 1973 film short Female Sensibility, in which Benglis is shown in close-up, kissing her friend and fellow artist Marilyn Lenkowsky – touch explicitly on sexuality and pornography. Has the advert haunted her? “Oh no,” she says. “I knew it would cause a stir. When I told my father about it, he just walked away. I knew not to bring it up again. But it has helped me make a living from my art since my early 20s, so I can’t exactly complain.”

Benglis has never overtly allied herself with feminism. “I’ve never been interested in whose turn it is to take out the garbage,” she says. “I mean, yes, it’s nice if there’s someone there to take it out for you, but I wasn’t really thinking about that. I didn’t want to go to meetings, or make lists of how many women are represented in art, or in any scene. I was more interested in ideas, in showing that an artist can be both masculine and feminine. But most importantly, an artist is an artist.”

Growing up in a Greek-American family in the waterfront city of Lake Charles, Louisiana, Benglis recalls only a vague early awareness of the wonders of colour. “I remember sheets of coloured paper, all laid out on the floor. I became fascinated by colour. And my parents had a reproduction of a Gauguin, a bare-breasted woman. I think I associated this very strongly with my mother, and that association remained throughout my work.”

Her fascination with colour has also endured: there are her bright Plasticine-like pourings of layered floor pieces; a series of grotty totem-like sculptures; and one of her most recent works, 2009’s Fi Tangerine, a wall-mounted piece of orange polyurethane that looks like coral, or brain, or moon rock.

Benglis’s sculptures throw up such images and influences over and over: her fascination with the ancient architecture of her ancestral homeland (she still has family on the tiny Greek island of Kastelorizo); her love of the curious marine life she encounters when scuba-diving; her interest in the wake of her mother’s stroke, with the texture and processes of the brain. But ultimately, her work stands as an exploration of the pure, abstract potential of form. “You can say, ‘Is there the influence of Greece?’ or ‘Do these works look like the sea?’ Those things are all there, but there are many other associations. I think all good art is really abstract. That’s how it transcends cultural differences. That’s how it speaks to us.”