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Turli Iqlim Sharoitida Quyosh Energiyasi Bilan Ishlaydigan Xona Havosini Tozalash Qurilmasini Takomillashtirish

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Quyoshdan olinadigan elektr energiyasi orqali xona havosini tozalash nafaqat ma’lum bir maydon havosidagi ifloslantiruvchi moddalarni yo'q qiladi, balki ayni vaqtda mavjud bo‘lgan an'anaviy energiya manbalariga bo'lgan talabni va istemolni kamaytiradi, atrof-muhitni ifloslantiruvchi moddalardan himoya qilish va ijtimoiy-iqtisodiy xarajatlarni tejashga yordam beradi.

Ushbu metodlar yordamida baraqarorlik, samaradorlik va real vaqtda nazorat qilish, ichki havo sifatini yaxshilash uchun juda muhim bo‘lgan yo‘nalishdir. Ushbu yo‘nalishni qo‘llab quvvatlash orqali quyosh energiyasiga bo'lgan ishonchni qayta tiklanadigan energiyani o'zlashtirish bo'yicha global ekologik sa'y-harakatlarga mos kelishligi bilan aloxida axamiyat kasp etadi.

Ushbu qurilmalar quyosh nuri energiyasini to‘xtovsiz o‘zlashtirish orqali atmosferadagi zararli havoni tozalash va doimiy monitoring tizimini amalga oshirish uchun quvvatga aylantirish maqsadida hamda qurilmaning to‘xtovsiz ish faoliyatini tashkil etish uchun quyosh batareyalaridan foydalaniladi. Asosan bu tartibdagi qurulmalar konchilik, qurilish, transport va sanoat ishlari kabi faoliyat natijasida yuzaga keladigan havoning ifloslanishi yuqori hududlarda ayniqsa aholi qatlami zich joylashgan shaharlarda kuchli havoning ifloslanishdan himoyalanish maqsadida foydalaniladi. Ushbu tizimning barcha xarakterli tomonlarini ta'minlash uchun quyosh energiyasidan asosiy energiya manbai sifatida foydalanishni qo‘llab quvvatlash maqsadga muvofiqdir **[1]**.

Atmosfera havosi zararlanish darajasi oshib borayotgan hududlarda istiqomad qilayotgan insonlarga atrof-muhit haqidagi o‘zgarishlar to‘g‘risida muhim ma'lumotlardan foydalanish imkonini berish orqali biz ularga sog'lom turmush tarzi uchun muhim qarorlar qabul qilish imkoniyatini havola etamiz. Shu kabi tadqiqotlarning maqsadi havoning ifloslanishi bilan bog'liq dolzarb global muammoni hal qilishda ekologik va iqtisodiy barqarorlikka hissa qo'shadigan yangi, o'zini o'zi ta'minlaydigan havoni tozalash tizimini takomillashtirish muhim axamiyatga ega **[2]**. Yuqorida keltirilgan muammolar qatorida atmosfera havosining ifloslanishining tashvishli darajasini kamaytirish uchun innovatsion texnologiyalarni yaratish va takomillashtirish kerak deb xisoblaymiz **[3].**

Aksariyat texnologiyalarda hozirgi vaqtda mavjud filtrlar, fotokimyoviy materiallar, so‘ya oqsillari va ipak nanofibrillari kabi atmosfera havosi hamda hona havosini tozalashning eng zamonaviy yangi usullari borasida izlanishlar olib borilmoqda. Mazkur yangi usullar an'anaviy metodlarda mavjud bo‘lgan filtrlari bilan solishtirganda PM 2.5, SO_x, NO_x va boshqa filtrlashning zamonaviy usullari shuningdek va iqtisodiy tejamkor yo'lini ta'minlashi isbotlandi **[4].**

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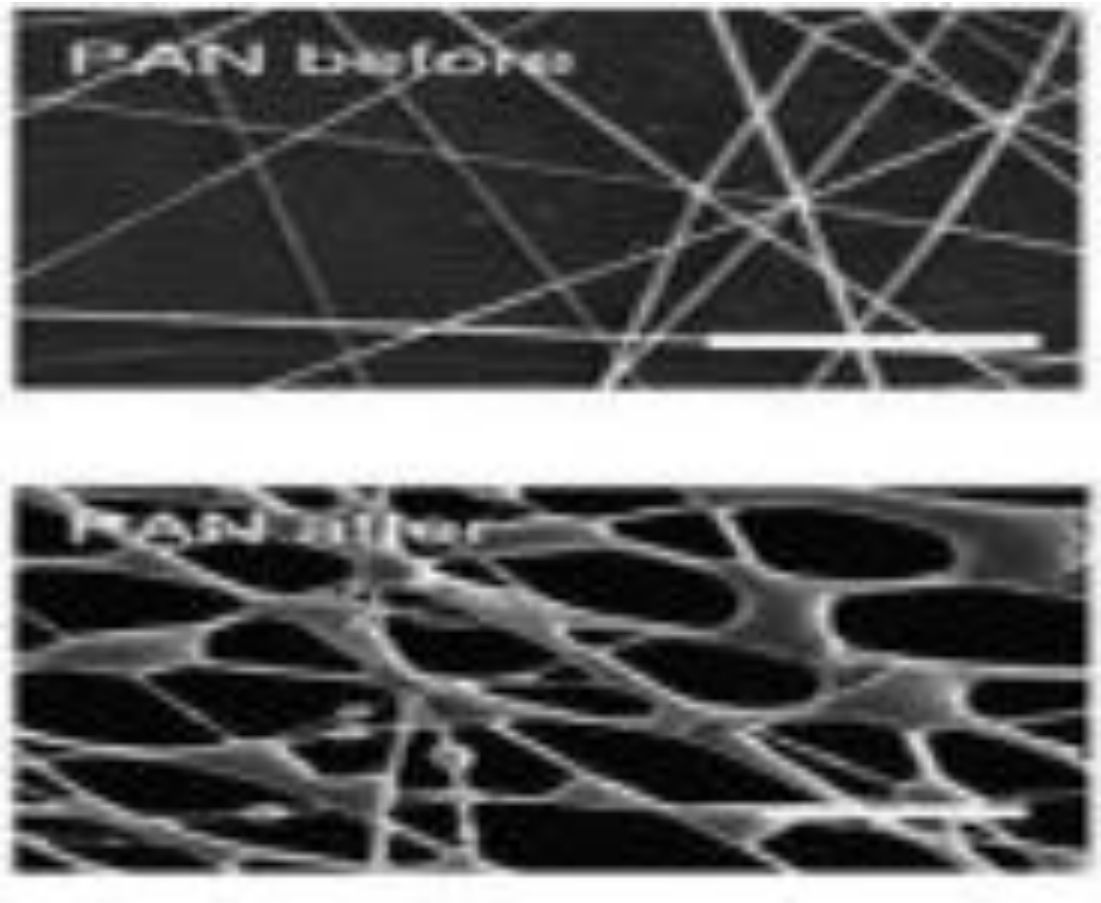
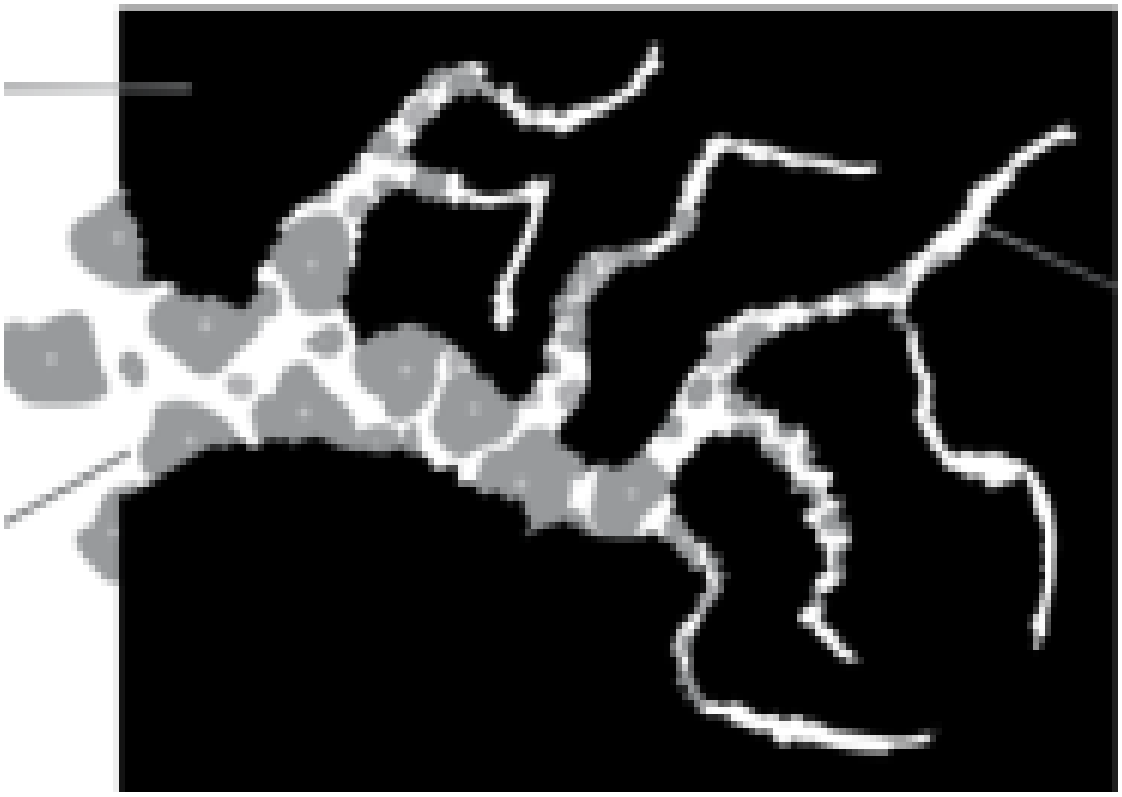


1-rasm. PM 2.5 dan oldingi va filtrlashdan keying holat.

So'nggi 50 yillikllarda atrof-muhit bosimi tobora jiddiylashib ekologik muammolarning yuqori cho‘qqisiga chiqib bormoqda **[5]**. Natijada bu odamlar o‘rtasida eng muhim mavzu sifatida qaraladigan va hona havosini tozalashning katta muammoli tashvishini keltirib chiqarmoqda **[5]** hona havosini turli qurilmalar va tozalagichlar yordamida tozalash so‘nggi vaqtlarda xar hil metodlar yordamida tozalash eng muhim mavzuga aylanib bormoqda **[6]**.

Turli xildagi qurilish maydonlari faoliyati natijasida atrof-muhitga katta kichik miqdordagi zarracha moddalar (PM) kontsentratsiyasini aniqlash va zarracha hajmini aniqlashga oid ishlarni jadallashtirish katta qiyinchiliklar tug'diradi **[7]**. Mazkur tartibdagi tadqiqotlarni olib borish jarayonida zarrachalarning xarakterli xususiyatlariga meteorologik sharoitlar, jumladan harorat, namlik, yog'ingarchilik va shamol tezligi ta'sir qiladi **[8]**. Hozirgi vaqtda shahar hududlada qo'llaniladigan xona havosini tozalashning turli xil ventilyatsiya turlari, shamollatish, yuqori samaradorlikka ega bo‘lgan havo bilan yutish usullarning qo'llanilishiga oid munosabatlar tadqiqotchilar tomonidan tahlil qilinmoqda **[9]**.

Aholi yashash punktlarida turli xildagi yuqumli va boshqa turdagi kasalliklarni keltirib chiqarishi mumkin bo'lgan oltingugurt zarralari havo tarkibi tutunning asosiy moddalardan biri bo‘lishi mumkin **[10]** shunday zarralarni tozalash maqsadida faollashtirilgan uglerod juda adsorbsion xususiyatlarga ega ekanligi qayd etiladi.



2-rasm. Faollashtirilgan uglerod orqali adsorbsiya mexanizmi

Shuning uchun, oltingugurt zarralari faollashtirilgan uglerod tomonidan adsorbsiyalangan va FT-IR tomonidan tahlil qilingada faollashtirilgan uglerod ko'plab anafilaktik kasalliklarni oldini olish uchun tutun havosidan oltingugurt zarralarini olib tashlashi mumkinligi aniqlangan **[10]**. Ijtimoiy va iqtisodiy holatlarni e’tiborga olib, arzonroq va samaraliroq havo tozalagichlarni ishlab chiqish hozirgi kuning dolzarb vazifalardan biri xisoblanadi. Mazkur tartibdagi barcha yaratiladigan qurilma atrofdagi havoni tortib olish va uni filtrlardan o'tkazish, havodan hid va ifloslantiruvchi moddalarni samarali olib tashlash uchun radial tortish mexanizmidan foydalanadi **[11]**.

Ilmiy-tadqiqot tajribalar real vaqt rejimida ekologik monitoring va erta ogohlantirish tizimni ishlab chiqishni tasdiqlash va qo'llab-quvvatlash uchun dastlabki amaliyotlarni kichik obyektlarda shuningdek sinov tariqasida yaratilgan ilk marotaba qo‘llanilgan qurilmada amalga oshirish ishlarini olib borish maqsadga muvofiq **[12]**.

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