

22<sup>th</sup> INTERNATIONAL SPECIALIZED COURSE  
 OPERATION AND CONTROL OF ACTIVATED SLUDGE  
 PROCESSES USING MICROBIOLOGICAL ANALYSIS  
 Perugia - Italy

FILAMENTOUS MICROORGANISMS IN ACTIVATED SLUDGE

Fungi

OBSERVATION AT 1000X			UNDER PHASE CONTRAST OBSERVATION	
OBSERVATION AT 1000X	Sulfur Granules	<i>In situ</i>	-	
		S Test	-	
	Other Cell Inclusions		-	
	Filament Diameter		5 - 10 µm	
	Filament Length		100 - 1000 µm	
	Filament Shape		-	
	Filament Location		Usually inside the flocs	
	Cell Septa clearly observed		-	
	Indentations at Cell Septa		A heavy cellulose cell wall is usually present	
	Sheath		-	
	Attached Growth		-	
	Cell Shape and Size		-	
	Notes:		Very large, truly branched filaments containing vacuoles, organelles and granules	
UNDER DIRECT ILLUMINATION				
Gram Stain			+ , -	
Neisser Stain	Filament		-	
	Granules		-	

**Causes:**

- Very low pH

**Remedies:**

- Raise pH



100 X

True branching



1000 X